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**National Highway
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**CALSPAN ON-SITE AIR BAG DEPLOYMENT INVESTIGATION
CALSPAN CASE NO. 95-21
VEHICLE: 1995 DODGE CARAVAN
LOCATION: MARYLAND
CRASH DATE: [REDACTED] 1995**

Contract No. DTHN22-94-D-07058

Prepared for:

U.S. Department of Transportation
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Washington, D.C. 20590

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The crash investigation process is an inexact science which requires that physical evidence such as skid marks, vehicular damage measurements, and occupant contact points are coupled with the investigator's expert knowledge and experience of vehicle dynamics and occupant kinematics in order to determine the pre-crash, crash, and post-crash movements of involved vehicles and occupants.

Because each crash is a unique sequence of events, generalized conclusions cannot be made concerning the crashworthiness performance of the involved vehicle(s) or their safety systems.

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15. Supplementary Notes On-site investigation of an intersection-type crash that involved a 1995 Dodge Caravan equipped with driver and passenger side air bags. The 7 year old right front occupant of the Dodge Caravan sustained fatal injuries from her involvement with the deploying passenger side air bag.			
16. Abstract This on-site investigation focused on a 1995 Dodge Caravan that was equipped with a supplemental driver and passenger side air bag system. The driver of the vehicle was distracted as he approached a red signal phase at a four-leg intersection. He applied a moderate braking force in an attempt to stop at the mouth of the intersection, however, the vehicle entered the intersection and struck the left passenger side area of a 1992 Chevrolet Lumina APV. The crash resulted in a sufficient longitudinal deceleration with deployed the Caravan's supplemental air bag system. The right front passenger of the Dodge Caravan was a 7 year old female with a reported height of 129.5 cm (51.0") and weight of 24.9 kg (55.0 lbs.). This investigation determined that the child occupant was improperly wearing the manual 3-point lap and shoulder belt with the shoulder belt webbing positioned behind her back. She was displaced forward as a result of the pre-impact braking force and was within a close proximity to the passenger side air bag as it deployed. The air bag contacted her anterior neck which rotated her head in an upward and rearward direction (hyperextension). The child occupant came to rest in an unresponsive state lying across the interior of the Caravan with her head resting on the inboard armrest of the driver's seat. She was removed from the vehicle by the driver and was given CPR at the scene by a physician who stopped to offer assistance. The occupant was transported by ambulance to a local hospital where she was diagnosed with a closed head injury with no brain stem function (AIS-5), subarachnoid hemorrhage (AIS-3), cerebral edema (AIS-3), and a large abrasion of the anterior neck that extended from ear to ear (AIS-2). In addition to these injuries, the child occupant sustained numerous possible injuries which included a subluxation of C ₂ , C ₃ , a transverse fracture of C ₂ , a jejunal hematoma, and a pancreatic laceration. She was subsequently transferred to a trauma center where she expired approximately 23 hours after the crash. The family declined an autopsy, therefore additional injuries (inclusive of the possible injuries) probably occurred.			
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TABLE OF CONTENTS

	<u>Page No.</u>
SUMMARY	1
CRASH SCHEMATIC	4
CRASH DATA	5
AMBIENCE	5
HIGHWAY	6
TRAFFIC CONTROLS	6
VEHICLES	7
VEHICLE DAMAGE	8
SUPPLEMENTAL RESTRAINT SYSTEM	11
VEHICLE VELOCITY ESTIMATES	14
COLLISION SEQUENCE	15
DRIVER DATA	17
RIGHT FRONT PASSENGER DATA	19
REAR SEAT PASSENGER SEAT DATA	23
ATTACHMENT A: Selected Color Prints	A1
ATTACHMENT B: Police Accident Report	B1
ATTACHMENT C: CRASHPC Output	C1
ATTACHMENT D: NASS Vehicle Forms	D1
ATTACHMENT E: NASS Occupant Forms	E1

CALSPAN ON-SITE AIR BAG DEPLOYMENT INVESTIGATION
CALSPAN CASE NO. 95-21
VEHICLE: 1995 DODGE CARAVAN
LOCATION: MARYLAND

SUMMARY

This on-site investigation focused on a child fatality that resulted from the deployment of the passenger side air bag in a 1995 Dodge Caravan. The 7 year old female child occupant was the right front passenger in the Caravan that was occupied by the 43 year old male driver and two additional child occupants seated in the second seat of the seven passenger vehicle configuration. On an approach to a four-leg intersection, the driver was momentarily distracted and failed to detect a red signal phase. He braked, however, the full frontal area of the Caravan impacted the left side area of a 1992 Chevrolet Lumina APV which resulted in deployment of the Dodge's supplemental driver and passenger side air bags. The right front child occupant was out of position in a forward direction as a result of the pre-crash braking force and within a close proximity to the passenger side air bag module assembly. The deploying air bag contacted the underside of her chin, face, anterior neck, and upper chest area which resulted in a closed head injury with no brain stem function, a large abrasion over the contacted body regions, and possible cervical spine injuries. She expired at a local trauma center approximately 23 hours following the crash.

The crash occurred at an urban four-leg intersection in [REDACTED] 1995, during daylight hours, at the onset of dusk. The Dodge Caravan was traveling in a southerly direction on the inboard travel lane at an estimated speed of 48-56 km/h (30-35 mph) in a posted 64 km/h (40 mph) speed zone. The dry asphalt road surface was straight with a slight hillcrest at the intersection. The Chevrolet Lumina APV was traveling in an easterly direction in the designated left turn lane of the three-lane intersecting street at a driver estimated speed of 32 km/h (20 mph) in a posted 40 km/h (25 mph) speed zone. The intersecting roadway was straight with a positive grade of 4 percent on the approach to the intersection. An overhead pre-timed signal system controlled traffic flow through the intersection.

The Dodge Caravan was purchased new by the driver approximately 10 days prior to the crash. The base model Caravan had a wheelbase of 285.2 cm (112.3") and was equipped with a Supplemental Restraint System (SRS) which consisted of driver and passenger side air bags. In addition to the SRS, the Caravan was equipped with manual 3-point lap and shoulder belt systems in the six outboard seated positions. The front seat manual belt systems were equipped with dual mode locking retractors and adjustable B-pillar mounted D-rings. The driver's side D-ring was adjusted to the full down position while the right front passenger side D-ring was adjusted to the top of the six adjustment positions. The Caravan had an odometer reading of 1,809 km (1,124 miles) at the time of the crash and was identified by vehicle identification number 2B4GH25R1SR.

On the approach to the four-leg intersection, the left rear seated occupant had asked his father (driver) to change the radio station. The driver probably momentarily redirected his attention toward the center mid mounted radio as he reached for the seek selector control. As he redirected his attention forward, the driver noted the red signal phase and applied a moderate braking force to the non-ABS equipped vehicle. There was no skidding reported (or observed at the crash site) as the Dodge Caravan entered the intersection. The driver of the Chevrolet Lumina APV was decelerating as she approached the intersection in the left turn lane on a green signal phase. As she entered the intersection and initiated the left turn, her vehicle was impacted by the Dodge Caravan.

The full frontal area of the Dodge impacted the left passenger side area of the Chevrolet Lumina APV. Impact speeds were computed at 35 km/h (22 mph) for the Caravan and 32 km/h (20 mph) for the Lumina APV. Resultant directions of force were within the 1 o'clock sector for the Caravan and 10 o'clock for the Lumina APV. The Caravan sustained a maximum crush value of 26.4 cm (10.4") located at the left corner of the front bumper. Crush to the side surface of the composite body of the Lumina was 7.6 cm (3.0") located at the sill at the base of the B-pillar. The impact produced velocity changes of 18 km/h (11 mph) for the involved vehicles. The longitudinal component of the velocity change for the Caravan was 18 km/h (11 mph) which deployed the supplemental driver and passenger side air bags.

The driver was probably restrained by the manual 3-point lap and shoulder belt system. In response to the frontal impact force, he initiated a forward trajectory and loaded the belt webbing and the deployed driver's side air bag. His left knee probably contacted the left aspect of the knee bolster which fractured the lower left mounting bracket. The driver's left hand separated from the steering wheel rim and contacted the left door panel at the door release lever. The trim panel was scuffed at the rearward edge of the plastic component. The right vent louver at the mid instrument panel was contacted and fractured from a probable right hand contact. Adjacent to the fractured vent louver was a tissue transfer with a hair fiber embedded into the transfer. The driver was not injured as a result of the crash.

The right front child occupant was in a slightly forward seated position pre-crash. Her brothers (rear seated occupants) noted that the 7 year old had developed a habit of sitting forward on the seat with her back positioned off the seat back support. In addition, the child occupant, who had a height of 129.5 cm (51.0") and weight of 24.9 cm (55 lbs.), would wear the 3-point lap and shoulder belt system with the shoulder belt webbing behind her back. Interior contact evidence and injury data indicated that she was in a forward position with the shoulder belt improperly placed behind her back as the SRS deployed.

As the driver braked the non-ABS equipped Dodge Caravan, the child occupant initiated a forward trajectory in response to the braking force. Her head and torso pitched forward as the lap belt restrained her pelvic area and lower extremities. At impact, the child occupant's face was within a close proximity to the deploying air bag. The bag deployed from the top mounted air bag module assembly and contacted the underside of her chin, face, anterior neck, and upper thoracic areas. This contact sequence produced a band-like abrasion which extended across the underside of the chin and

onto the face, from ear-to-ear. A large area of abrasion extended circumferentially across the anterior and lateral neck, left anterior shoulder, and mid upper chest area. Multiple tissue transfers were noted to the air bag at the upper right quadrant of the bag. A large tissue transfer was noted to the right lower quadrant of the windshield. This tissue appeared to have been expelled from the occupant's neck area by the expanding air bag.

The occupant was subsequently elevated by the deploying passenger side air bag as she continued on her forward trajectory in response to the frontal impact force. As a result of her forward position, the passenger side air bag expanded against the module assembly and bowed the side and lower surfaces of the mounting bracket. The deploying bag was displaced in an upward direction as it contacted the windshield, headliner, and forward aspect of the right sunvisor. The visor and headliner contact was evidenced by fabric abrasions to the components. Windshield contact was confirmed by air bag fabric abrasions across the right upper aspect of the laminated glass. There was a star-like crack to the laminated windshield (11.0") right of center and (2.5") below the header. The contact point lacked a transfer which could have identified a mechanism for the damage, therefore, the source of the crack was unknown. The air bag also expanded against the rear view mirror, separating the mirror from the windshield mount. The mirror was displaced to the left across the windshield before coming to rest on the upper instrument panel at the base of the left A-pillar.

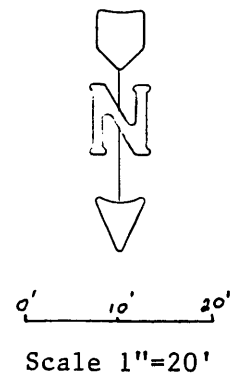
The deploying passenger side air bag resulted in a closed head injury with right parietal and occipital scalp swelling and no brain stem function (AIS-5), an intraventricular bleed at the fourth ventricle (AIS-4), subarachnoid hemorrhage (AIS-3), and cerebral edema (AIS-3). In addition, possible injuries included a transverse fracture of the inferior aspect of C₂, C₂/C₃ subluxation, and a spinal cord injury.

The upward displacement of the child occupant by the deploying air bag, in conjunction with lap belt usage, extended the occupant's abdominal area resulting in possible injuries which included a jejunal hematoma, a subtle pancreatic laceration, and atelectasis or infiltrate of the lungs bilaterally. There was no loading evidence on the belt system webbing or hardware components.

The child occupant came to rest lying across the right front seat with her head positioned on the inboard armrest of the driver's seat. Her pelvic area remained in the right front seat. The driver stated that he had difficulty in removing the child occupant's belt system following the crash. He removed her from the vehicle and placed her on the pavement adjacent to the final rest position of the vehicle. A physician passer-by stopped at the crash site and administered CPR to the child. She was subsequently transported to a local hospital where she was diagnosed with the lack of brain stem function. The child was transferred to a local trauma center where her injuries were confirmed. She expired approximately 23 hours following the crash. The family declined an autopsy, therefore the known and possible injuries noted above were identified by CT scan and clinical diagnosis.

The rear seated child occupants were properly restrained by the manual 3-point lap and shoulder belts. They initiated forward trajectories in response to the impact force and loaded the belt webbing which prevented them from contact with interior components and possible injury.

CALSPAN CASE NO. 95-21



CALSPAN ON-SITE AIR BAG DEPLOYMENT INVESTIGATION
CALSPAN CASE NO. 95-21
LOCATION: MARYLAND
VEHICLE: 1995 DODGE CARAVAN

CRASH DATA

Location: 4-leg urban intersection
State: Maryland
Area/Type: Urban/Residential
Crash Date: [REDACTED] 1995, daylight hours
Investigating Police Agency: [REDACTED]
Crash Type: Minivan/Minivan, front-to-side configuration
Air Bag Vehicle
Occupant Injury Severity: Driver - Not injured
Right Front Occupant - Fatal
Left Rear Occupant - Not injured
Right Rear Occupant - Not injured

AMBIENCE

Viewing Conditions: Daylight
Weather: Overcast
Precipitation: None
Road Surface: Dry

HIGHWAY

	<u>Air Bag Vehicle</u>	<u>Vehicle #2</u>
Type:	Minor arterial	Urban collector
Number of Lanes:	4, undivided	3, inclusive of left turn lane
Width:	13.0 m (42'6")	11.0 m (36.0')
Surface:	Asphalt	Asphalt
Median:	None	None
Edge:	East edge - Barrier curb West edge - Barrier curb	North edge - Barrier curb South edge - Barrier curb
Vertical Alignment:	1.5 percent grade, positive to the south, hillcrest at intersection	4.0 percent grade, positive to the east
Horizontal Alignment:	Straight	Straight
Estimated Coefficient of Friction:	0.7	0.7
Traffic Density:	Light-to-moderate	Light

TRAFFIC CONTROLS

Signals:	On-colors, pre-timed overhead signal system	On-colors, pre-timed overhead signal system
Signs:	No pertinent signs	No pertinent signs
Markings:	Painted yellow flush full barrier centerlines, painted (dashed) lane lines	Painted yellow flush full barrier centerlines, solid white left turn lane line, solid white stop line, painted pedestrian crosswalks
Speed Limit:	64 km/h (40 mph)	40 km/h (25 mph)

VEHICLES

	<u>Air Bag Vehicle</u>	<u>Vehicle #2</u>
Description:	1995 Dodge Caravan, 285.2 cm (112.3") wheelbase	1992 Chevrolet Lumina APV
V.I.N.:	2B4GH25R1SR	1GNDU0619NT
Date of Manufacture:	██████	██████
Color:	Blue	Black
Odometer:	1809 km (1124 miles)	77,412 km (48,103 miles)
Engine:	3.3 liter, V-6	3.1 liter, V-6
Transmission:	3-speed automatic, column mounted transmission selector lever	4-speed automatic overdrive, column mounted transmission selector lever
Steering:	Power-assisted rack-and-pinion	Power-assisted rack-and-pinion
Brakes:	Power-assisted front disc, rear drum (not ABS equipped)	Power-assisted front disc, rear drum, with anti-lock (ABS)
Padding:	Upper and mid instrument panel, soft-edged steering wheel rim, integral head restraints, sunvisors, headliner, door panels, door armrests, fold-down armrests	Upper instrument panel, soft-edged steering wheel rim, hub, and spokes, upper door panels, door armrests, sunvisors, headliner, head restraints
Manual Restraints:	3-point continuous loop lap and shoulder belts in the six outboard seated positions. Front belts had adjustable B-pillar mounted D-rings with dual mode (inertia activated and belt sensitive) locking retractors. The third seat, center position was equipped with a manual lap belt.	3-point continuous loop lap and shoulder belts in the six outboard seated positions, center second seat lap belt

VEHICLES (CONT'D.)

	<u>Air Bag Vehicle</u>	<u>Vehicle #2</u>
Automatic Restraints:	Supplemental Restraint System (SRS) which consisted of driver and passenger side air bags. The SRS deployed as a result of the Dodge Caravan's frontal impact sequence with the side of vehicle #2.	Not equipped.
Tow Status:	Towed due to vehicle damage	Towed due to vehicle damage

VEHICLE DAMAGE

<u>Air Bag Vehicle</u>	<u>Vehicle #2</u>
The 1995 Dodge Caravan sustained moderate damage that was distributed across the entire frontal plane of the vehicle. The front-to-side impact sequence crushed the front bumper structure of the Caravan and separated the bumper fascia from the reinforcement bar. Direct contact damage, which consisted of abrasions, began at the right front corner of the bumper fascia, 77.5 cm (30.5") right of center, and extended 154.31 cm (60.75") to the left corner area. The vertical height of the direct contact damage extended onto the hood face and leading edges of the front fenders.	The 1992 Chevrolet Lumina APV sustained moderate left side damage from its impact sequence with the Dodge Caravan. The composite exterior body panels of the Lumina APV compressed as a result of the impact and rebounded to approximately the original positions. The steel substructure of the left B-pillar and sill areas retained the crush pattern from the engagement. Direct contact damage consisted of abrasions and paint transfers which began 116.2 cm (45.75") forward of the left rear axle position and extended 160.0 cm (63.0") forward to the left front wheel.

VEHICLE DAMAGE
(CONT'D.)

	<u>Air Bag Vehicle</u>	<u>Vehicle #2</u>
Exterior (Cont'd.)	<p>Maximum crush was 26.4 cm (10.4") located at the left front corner of the fiberglass-type bumper reinforcement bar. Crush values at bumper reinforcement bar level were as follows: C₁=26.4 cm (10.4"), C₂=23.1 cm (9.1"), C₃=8.9 cm (3.5"), C₄=6.6 cm (2.6"), C₅=4.8 cm (1.9"), C₆=5.7 cm (2.25").</p> <p>Components damaged by the crash involved the front bumper facia and reinforcement bar, grille, left headlamp assembly, both parking light and turn signal assemblies, hood, and both front fenders. Rearward displacement of the frontal structure did not result in reduction of the wheelbases.</p>	<p>Maximum crush was 7.6 cm (3.0") located at the base of the left B-pillar. The residual crush profile was located at the sill of the vehicle and extended from the left A-pillar to the B-pillar. Crush values at this level were as follows: C₁=7.6 cm (3.0"), C₂=6.6 cm (2.6"), C₃=7.0 cm (2.75"), C₄=5.1 cm (2.0"), C₅=3.6 cm (1.4"), C₆=0 cm (0.0").</p> <p>The displacement of the left B-pillar resulted in the release of the left door latch from the strike post. In addition, the left wheel contact resulted in a fracture of the right tie rod.</p> <p>Damaged components included the left front wheel, right tie rod, left front fender, left door panel, left sill, left B-pillar, and the left rear quarter panel.</p>
CDC:	01-FDEW-2	09-LYEW-2
Repair Cost:	Total loss	\$4000 (estimated)

Interior
(Air Bag Vehicle):

The interior of the 1995 Dodge Caravan sustained minor damage that was associated with deployment of the supplemental air bag system and occupant contact. There were no intruding components or interior deformation resulting from the frontal impact damage.

The driver side air bag deployed as designed from the H-configuration cover flaps of steering wheel mounted module assembly. There was no damage directly associated with

VEHICLE DAMAGE (CONT'D.)

Interior (Air Bag Vehicle)

the air bag deployment, however, the inflating air bag contacted the anterior aspects of the driver's forearms which displaced his left hand from the steering wheel rim. The hand/wrist area contacted and scuffed the left door release lever plastic trim panel located at the upper forward quadrant of the door panel. The driver's left knee probably impacted the left side of the plastic knee bolster as he responded to the frontal impact force. Although no direct loading evidence was visible to the exterior surface of the bolster, the lower left mounting bracket was fractured at the head of the attachment screw.

The center mid aspect of the instrument panel contained a series of three vent louvers located between the radio and the ventilation controls. The plastic right vent louver was fractured, but remained within its housing. A scuff mark was noted to the right side of the louver 11.2 cm (4.4") right of center and 21.0-22.2 cm (8.25-8.75") below the upper panel. Located directly above the fractured louver was a tissue transfer with a hair fiber within the transfer. A scuff mark surrounded the transfer which was 10.2 cm (4.0") right of center and 13.0 cm (5.1") below the upper panel. This transfer probably resulted from a hand contact and was within the area of the radio, however, there was no reported hand injuries to either the driver or the child right front passenger.

The passenger side air bag deployed from the top mount module assembly that was located in the upper right side of the instrument panel. The initial deployment of the passenger side air bag appeared to be within normal limits, however, the improperly restrained right front child occupant was out-of-position (forward) due to pre-impact braking and, therefore altered the inflation pattern of the air bag. As the bag expanded from the module and cover flap assembly, the chin and neck areas of the child passenger were within a close proximity to the module assembly which allowed the bag to expand against the occupant. Her forward position and trajectory restricted the normal rearward inflation of the bag. The inflating air bag subsequently expanded against the perimeter of the module assembly which deformed the mounting plate and the adjacent padded instrument panel. The panel adjacent to the side surfaces of the passenger side air bag module were bowed outward approximately 3.1 mm (0.125") while the bottom surface was displaced downward 2.5 cm (1.0"). In addition, air bag fabric transfers were noted to the instrument panel directly below the module assembly.

The right padded instrument panel was torn at the junction of the passenger side air bag module cover flap and the right vent louver (refer to Photograph No. 50) from air bag expansion. The child occupant's loading of the air bag, in combination with the expansion of the bag, displaced the bag in a forward and upward direction. The bag contacted and produced a patterned fabric transfer on the right vent louver (refer to Photograph Nos. 51

VEHICLE DAMAGE (CONT'D.)

Interior (Air Bag Vehicle)

and 52). The passenger side air bag subsequently contacted the upper surface of the windshield and the leading edge of the right sunvisor and headliner. A whitish air bag fabric transfer extended across the right upper aspect of the windshield 21.6-49.2 cm (8.5-19.375") right of center and 1.3-5.1 cm (0.5-2.0") below the header. The bag abraded the fabric on the visor at a point that began 20.3 cm (8.0") right of the vehicle's centerline and extended 14.7 cm (5.8") to the right. The abrasion extended 0.6 cm (0.25") vertically on the radius of the visor at the pivot rod. Located directly forward of this fabric abrasion was a similar type abrasion on the forward edge of the headliner 24.1-33.7 cm (9.5-13.25") right of center. At the midpoint of the abrasion, the headliner sagged slightly from the contact. The visor and windshield contacts are documented in Photograph Nos. 56-59.

In addition to the fabric transfers on the windshield, a star-like crack occurred to the laminated glazing, located 27.9 cm (11.0") right of center and 6.4 cm (2.5") below the header. There was no contact evidence surrounding the impact point to the windshield, therefore the source of the crack was unknown. The possible sources include occupant contact; either head or hand contact from the right front passenger, or a fracture that resulted from air bag contact.

The left side area of the expanding passenger side air bag contacted the interior mounted rear view mirror as the right front occupant altered the deployment trajectory of the bag. The bag contact produced a fabric transfer to the right side of the mirror and displaced the mirror to the left, separating it from the windshield mount. Although no damage occurred to the plastic frame of the mirror, the contact cracked the full width of the mirror glass. The separated mirror was displaced across the left side of the windshield before coming to rest on the upper instrument panel at the base of the left A-pillar.

SUPPLEMENTAL RESTRAINT SYSTEM

The 1995 Dodge Caravan was equipped with a Supplemental Restraint System (SRS) that consisted of dual driver and passenger side air bags. The SRS deployed as a result of the intersection-type collision with the 1992 Chevrolet Lumina APV. The system's components included a single point crash sensor, a diagnostic module with an active and stored fault code readout mode, the steering wheel mounted driver air bag module assembly, the top mounted passenger side air bag module assembly, and the instrument panel mounted *AIR BAG* indicator lamp. The driver air bag was mounted to a tilt steering wheel which was adjusted to the mid (center) position.

SUPPLEMENTAL RESTRAINT SYSTEM (CONT'D.)

Warning labels, which were (2.125 x 4.5") in size, were affixed to the exposed side of the sunvisors of the Dodge Caravan, contained the following safety precautions:

CAUTION TO AVOID SERIOUS INJURY:

- FOR MAXIMUM SAFETY PROTECTION IN ALL TYPES OF CRASHES, YOU MUST ALWAYS WEAR YOUR SAFETY BELT.
- DO NOT INSTALL REARWARD FACING CHILD RESTRAINTS IN ANY FRONT PASSENGER SEAT POSITION.
- DO NOT SIT OR LEAN UNNECESSARILY CLOSE TO THE AIR BAG.
- DO NOT PLACE ANY OBJECTS OVER THE AIR BAG OR BETWEEN THE AIR BAG AND YOURSELF.
- SEE THE OWNER'S MANUAL FOR FURTHER INFORMATION AND EXPLANATIONS.

The driver side air bag module opened at the designated tear points in an H-configuration with symmetrical (rectangular) cover flaps. The upper module cover flap had vertical dimensions of 5.1 cm (2.0") at the outboard edges and 6.0 cm (2.375") at the inboard hinge point. Horizontally, the upper flap was 18.4 cm (7.25"). The lower module cover flap had respective dimensions of 6.7 cm (2.625") and 18.4 cm (7.25"). SRS AIR BAG was embossed into the lower right quadrant of the lower module cover flap. The inside surface of the upper module cover flap had an identification number of [REDACTED] molded into the vinyl-type material.

The driver air bag was constructed of a typical close weave nylon-type fabric with a neoprene liner. In its deflated state, the bag was approximately 63.5 cm (25.0") in diameter and was vented by two 2.5 cm (1.0") diameter ports located at the 12 o'clock sector of the bag. The vent ports were positioned 8.3 cm (3.25") forward of the peripheral seam and 19.1 cm (7.5") above the gas generator mounting bracket, on 7.6 cm (3.0") centers. There were no internal tether straps for the driver bag. A bar coded label was affixed to the bag at the 12 o'clock sector which identified the bag as follows: [REDACTED] and [REDACTED] (refer to Photograph No. 26). Adjacent to this label were the numbers [REDACTED] and [REDACTED]. Stamped at the 6 o'clock sector of the bag, forward of the peripheral seam, was a grid which contained the numbers [REDACTED] and [REDACTED] (refer to Photograph No. 27).

There was evidence of driver loading on the air bag, however, a series of horizontal blackish transfers were noted to the face of the bag, on the right side. These transfers probably occurred as the bag expanded against the gas generator mounting bracket during deployment. There was no restriction of the bag during deployment by an out of position occupant.

SUPPLEMENTAL RESTRAINT SYSTEM (CONT'D.)

The passenger side air bag was a top mount-type configuration located in the right upper instrument panel of the Dodge Caravan. The rigid vinyl cover flap was hinged at the forward aspect of the module and opened at the designated tear points in an upward direction. The flap measured 32.4 cm (12.75") in width and ranged from 14.9 cm (5.875") to 15.9 cm (6.25") in depth. SRS AIR BAG was embossed into the lower right quadrant of the cover flap.

The passenger side air bag was a non-vented, porous-type woven nylon fabric. The bag was tethered by two internal tethers that were approximately 30.5 cm (12.0") in width and sewn to the face of the bag on 28 cm (11") centers. The upper internal tether was located approximately 52.1 cm (20.5") below a primary horizontal seam which extended 10.2 cm (4.0") outward from the module assembly.

As the SRS deployed, the forward position of the right front child occupant altered the normal deployment path of the passenger side air bag. The module cover flap opened in an upward direction at the designated tear points. Air bag fabric transfers were noted to the leading edge of the lower left quadrant of the cover flap. These transfers began 10.8 cm (4.25") left of the center point of the cover flap and extended 2.5 cm (1.0") to the left. There was no damage or evidence of occupant contact to the module cover flap. The trim panel located forward of the passenger side module assembly was partially disengaged along the base of the windshield. Separation of the three retaining clips resulted in vertical displacement of the entire right side of the plastic panel (refer to Photograph No. 41). As the bag expanded from the module assembly, it contacted the underside of the child occupant's chin, face, and the anterior aspect of her neck and chest as she moved on a forward trajectory in response to the pre-crash braking force and subsequent impact force. The result of this occupant interaction allowed the bag to expand between the child occupant and the module assembly.

The bag expanded against the stamped steel air bag mounting bracket. The sides of the bracket were bowed outward approximately 3.2 mm (0.125") while the lower flange of the bracket was bowed 2.5 cm (1.0"). The outward bowing of the lower flange deflected the padded mid instrument panel 1.3 cm (0.5") downward at the mid point of the module assembly. An air bag fabric transfer was noted to the deformed padded mid panel (17.5-19.5") left of center and 69.9 cm (27.5") above the floor pan. The bowing of the module assembly, in combination with the opening of the top hinged cover flap and air bag expansion, resulted in a tear of the mid/upper instrument panel juncture at the narrow point adjacent to the right vent louver (refer to Photograph No. 51). A patterned air bag fabric transfer was noted to the left side of the right vent louver. The transfer measured 3.8 cm (1.5") vertically and 4.4 cm (1.75") horizontally across the upper left corner of the vent assembly.

SUPPLEMENTAL RESTRAINT SYSTEM (CONT'D.)

Passenger side air bag deployment against the child occupant's facial and neck areas resulted in numerous areas of tissue transfers. Located at the upper right quadrant of the air bag was an area of scattered tissue fragments which occupied an area of 3.2 x 4.45 cm (1.25 x 1.75"). These transfers are documented in Photograph Nos. 43 and 44. Additional tissue transfers were noted to the upper right side surface of the bag. These areas consisted of heavy transfers embedded into the fabric of the bag. The first tissue transfer to the side of the bag was located 12.7-20.3 cm (5.0-8.0") below a triangular blue stitch line and 7.0-10.8 cm (2.75-4.25") right of the apex of the stitch pattern. The second transfer extended 15.9-21.6 cm (6.25-8.5") right of the blue stitch line apex and continued from the end of the stitch line to a point located 7.6 cm (3.0") below the stitch line (refer to Photograph Nos. 45-48). An additional area of tissue was noted to the lower right quadrant of the windshield. This tissue involved fragments that were expelled from the occupants neck area as the bag expanded against the soft tissue.

A large triangular, horizontally orientated patterned-type transfer was noted to the right side of the bag adjacent to the side seam. The transfer began 15.2 cm (6.0") below the top horizontal seam and extended 57.2 cm (22.5") vertically. The transfer began in a horizontal direction 3.9 cm (1.5") inboard of the side seam and widened to 14.0 cm (5.5") before fading at a point 1.3 cm (0.5") inboard of the referenced seam (refer to Photograph No. 40). These transfers originated in a beige tone before blending into a blackish transfer which probably resulted from bag expansion against the module mounting bracket.

In addition to the above transfer, a large gray vinyl transfer began 5.1 cm (2.0") below the top horizontal seam and extended 26.7 cm (10.5") downward. The transfer was 6.4 cm (2.5") in width at the upper aspect and widened to 16.5 cm (6.5") at the base (refer to Photograph No. 42). This transfer probably resulted from air bag expansion against the inside surface of the module cover flap. The passenger bag remained intact with no evidence of tears.

VEHICLE VELOCITY ESTIMATES

	<u>Air Bag Vehicle</u>	<u>Vehicle #2</u>
Travel Speed:	48-56 km/h (30-35 mph)	32 km/h (20 mph)
Impact Speed:	35 km/h (22 mph)	32 km/h (20 mph)
Total Velocity Change:	18 km/h (11 mph)	18 km/h (11 mph)
Longitudinal Velocity Change:	-18 km/h (-11 mph)	-5 km/h (-3 mph)
Lateral Velocity Change:	-4 km/h (-2 mph)	17 km/h (10 mph)
Energy Absorption:	31,307 joules (23,088 ft-lb)	5,925 joules (4369 ft-lb)

COLLISION SEQUENCE

Pre-Crash:

The 1995 Dodge Caravan was traveling in a southerly direction on the outboard travel lane of the arterial at an estimated speed of 48-56 km/h (30-35 mph). The driver had departed his residence and had traveled the distance of several blocks as he approached the four-leg intersection. The driver's 10 year old son was seated in the left position of the second seat. On the approach to the intersection, the son had asked his father (driver) to change the station on the radio. The son stated to the investigating police officer that his father had pressed the seek selector on the radio. This action probably momentarily distracted the driver as he approached the intersection on a red signal phase. As he redirected his attention forward, the driver noted the red signal phase and applied a moderate braking force. (The braking force was verified by the driver and the second seat child occupants.) There was no skidding reported by the driver and child occupants of the non-ABS equipped Dodge Caravan. In addition, there were no tire (skid) marks observed at the crash scene by either the investigating police officer or this Calspan investigator. The Dodge Caravan subsequently entered the intersection at a reduced speed from its initial velocity.

Vehicle #2, the 1992 Chevrolet Lumina APV, was traveling in a easterly direction on the intersecting street and approached the four-leg intersection on a green signal phase at a driver estimated speed of 32 km/h (20 mph). The driver had entered the designated left turn lane and was decelerating for a left turn onto the four-lane arterial roadway. As the driver of vehicle #2 entered the intersection and initiated her left turn, she observed the southbound Dodge Caravan enter her path of travel. There was no avoidance action initiated by the driver of the Chevrolet Lumina APV.

Crash:

The full frontal area of the Dodge Caravan impacted the left front and passenger side area of the Chevrolet Lumina APV. Impact speeds were computed at 35 km/h (22 mph) for the Dodge Caravan and 32 km/h (20 mph) for the Lumina by the damage and trajectory algorithm of the CRASHPC program. Resultant directions of force were within the 01 sector PDOF of 20 degrees) for the Caravan and 10 o'clock (PDOF of 80 degrees) for the Chevrolet Lumina APV. As the Caravan engaged the side structure of the Lumina, the vehicles underwent velocity changes of 18 km/h (11 mph). The CRASHPC program computed a longitudinal component of 18 km/h (11 mph) for the Caravan which was of sufficient magnitude to deploy the SRS. The engagement redirected the Chevrolet Lumina APV in a clockwise (CW) direction as it entered the northbound travel lanes. The Lumina came to rest diagonally across the northbound lanes with its frontal area facing in a southeasterly direction. The Lumina APV's center of gravity (CG) was displaced approximately 7 m (23') from its at-impact position. The Dodge Caravan was displaced in a counterclockwise (CCW) direction as its CG traveled approximately 3.4 m (11.0') southeast of its at-impact position. At rest, the Dodge Caravan was directly behind the final rest position of the Lumina, facing in the southeasterly direction.

COLLISION SEQUENCE (CONT'D.)

Post-Crash:

Driver Activities - As the Dodge Caravan came to rest, the driver noted the final rest position of the Chevrolet Lumina APV and observed the smoke-like residue within his vehicle that was associated with air bag deployment. He briefly checked the status of his children within the vehicle and noted that his daughter in the right front position was injured. The driver stated that he unbuckled his manual restraint system and moved between the front seats of the vehicle to attend to his injured daughter. He repositioned her toward the right and unfastened her manual belt system. The driver stated that he had difficulty in removing the shoulder belt webbing of the 3-point belt system from around his daughter. He stated that he reached and opened the right front door of the Caravan and removed his daughter from the vehicle and placed her on the road surface adjacent to the vehicle. The injured daughter was subsequently moved to a grassy area adjacent to the roadway and was administered CPR by a physician who had stopped at the scene to offer assistance.

The driver of vehicle #2 and her right front passenger sustained minor severity injuries and remained in their vehicle following the crash. Emergency personnel provided treatment to the occupants within the vehicle and removed them from the Lumina APV on backboards. They were transported to a local hospital where they were treated for their injuries and released.

Police Activities - Several units responded to the crash scene to assist with traffic control and the investigation. The investigating officer documented the final rest positions of the vehicles prior to authorizing removal from the scene.

Rescue Activities - The right front child occupant of the Dodge Caravan was transported by ambulance to a local hospital where she was evaluated and diagnosed with critical severity head injuries. She was subsequently transferred to a trauma center where her critical condition was confirmed. The occupant expired approximately 23 hours following the crash.

Scene Clearance - The involved vehicles sustained disabling damage and were towed to the police impound lot at the request of the investigating officer.

HUMAN FACTORS/OCCUPANT DATA

Air Bag Vehicle

Driver:	45 year old male
Height:	188.0 cm (74.0")
Weight:	78.5 kg (173 lbs.)
Manual Restraint Usage:	Possible 3-point lap and shoulder belt
Usage Source:	Driver interview, no visible evidence of usage on belt system
Eyewear:	Prescription eyeglasses; remained on face, not damaged
Vehicle Familiarity:	Approximately 10 days (recently purchased)
Route Familiarity:	Daily, within several blocks from residence
Trip Plan:	Returning children to mother's residence
Type of Medical Treatment:	None, not injured

DRIVER INJURIES

Injury	Injury Severity (OIC/AIS)	Injury Mechanism
Not Injured	N/A	N/A

DRIVER KINEMATICS

The driver of the 1995 Dodge Caravan was probably in a normal driving posture at impact with both hands positioned on the steering wheel. He was braking with moderate pedal pressure in an attempt to avoid the impending crash. The driver stated he was wearing the manual 3-point lap and shoulder belt system, however, there was no evidence of usage, or loading on the belt webbing and system hardware. (The Dodge Caravan was new, therefore routine usage wear marks on the latchplate and webbing would have been minimal.) At the time of vehicle inspection, the B-pillar mounted D-ring was adjusted to the lowest of the six adjustable positions. The driver's seat track was adjusted to the full rearward position with the seat back reclined to an angle of approximately 20 degrees. The tilt steering column was adjusted to the center position.

At impact, the driver initiated a forward trajectory in response to the frontal impact force. If restrained, he would have loaded the manual 3-point lap and shoulder belt system. In addition, the driver loaded the deployed driver side air bag which prevented him from contact

DRIVER KINEMATICS (CONT'D.)

with the steering assembly and windshield. There was no contact evidence or loading damage to the driver's side air bag. Although the driver probably loaded the deployed air bag and compressed the air bag against the steering wheel, there was no compression of the energy absorbing steering column and/or shear brackets. The deploying air bag probably contacted the anterior aspects of the driver's forearms. As a result of probable forearm contact, the driver's left hand separated from the steering wheel and contacted the upper surface of the left door panel at the door release lever. A whitish-type scuff mark (possible tissue or fabric transfer) was documented to the trim panel for the release lever. The probable hand contact was 5.1 cm (2.0") wide and 9.5 cm (3.75") vertically.

Prior to the pre-crash braking efforts by the driver, he was allegedly reaching with his right hand to adjust the tuner (seek/scan feature) on the mid center mounted radio. There was no contact evidence to the radio, however, there was a contact to the right vent louver located directly below the radio. The contact fractured the plastic vent louver and scuffed the right side trim panel. In addition, there was a tissue transfer with a hair fiber to the mid panel (4.0") right of center, directly above the fractured vent louver. The contact evidence resembled a hand contact sequence, however, there was no hand injury reported to the driver or the right front child occupant of the Caravan.

The driver's left knee probably contacted the left side of the plastic knee bolster. There was no evidence of contact to the exterior surface of the bolster, however, upon removal of the bolster to inspect the energy absorbing steering column, the lower left outboard mounting bracket of the bolster was fractured at the screw position. This damage could have resulted from knee loading or during the assembly process of the vehicle.

The driver came to rest in his respective seated position. He stated that he unbuckled his manual seat belt system and attended to his injured daughter in the right front position of the vehicle.

RIGHT FRONT PASSENGER

Passenger Age/Sex: 7 year old female

Height: 129.5 cm (51.0")

Weight: 24.9 kg (55.0 lbs.)

Manual Restraint Usage: Improper use of the 3-point lap and shoulder belt system. The lap belt was in place, however, the shoulder belt was improperly placed behind the passenger's back.

Usage Source: Vehicle inspection, passenger kinematics and injury pattern, interview data, and police statements

Eyewear: None

Removal From Vehicle: Removed from vehicle by driver (father)

Mode of Transport From Scene/Medical Treatment: Transported by ambulance to a local hospital and subsequently transferred to a local trauma center where she expired approximately 23 hours following the crash

RIGHT FRONT PASSENGER INJURIES

<u>Injury</u>	<u>Injury Severity (OIC/AIS)</u>	<u>Injury Mechanism</u>
Closed head injury with right parietal and occipital scalp swelling; no brain stem function, occupant was not responsive to voice or painful stimuli (GCS of 3)	Critical (160212.50)	Deploying passenger side air bag
Intraventricular bleed at the fourth ventricle	Severe (140678.4)	Deploying passenger side air bag
Subarachnoid hemorrhage with ventricular extension, diffuse raised intracranial pressure with probable descending transtentorial herniation (no evidence of midline shift)	Serious (140684.39)	Deploying passenger side air bag

<u>Injury</u>	<u>Injury Severity (OIC/AIS)</u>	<u>Injury Mechanism</u>
Cerebral edema, not further specified	Serious (140668.39)	Deploying passenger side air bag
Large anterior neck abrasion as noted on medical report with second degree abrasion of neck and first degree abrasion over right apical shoulder and at left clavicular area	Minor (140684.35) Minor (390202.15) Minor (790202.11) Minor (790202.12)	Deploying passenger side air bag
<i>The attached photographs identify a band-liked abrasion the extends across the underside of the chin across the cheeks from the right ear to within 2.5 cm of the left ear. The abrasion extends circumfrentially 180 degrees onto the anterior and lateral neck, left shoulder, and the mid upper area of the chest.</i>	<i>Minor (290202.18, 290202.11, 290202.12)</i> <i>Minor (390202.15, 390202.11, 390202.12)</i> <i>Minor (790202.12, 490202.14)</i>	
Soft tissue swelling of neck	Minor (390402.15)	Deploying passenger side air bag

<u>Possible Injuries</u>	<u>Not Codeable Under AIS 90 Rules</u>	<u>Possible Injury Mechanism</u>
Transverse fracture in the inferior aspect of C ₂ body	N/A	Deploying passenger side air bag
C ₂ /C ₃ subluxation	N/A	Deploying passenger side air bag
Spinal cord injury	N/A	Deploying passenger side air bag

<u>Possible Injuries</u>	<u>Not Codeable Under AIS 90 Rules</u>	<u>Possible Injury Mechanism</u>
Jejunal hematoma cannot be excluded, diffuse dilatation of small bowel with irregular mucosal fold thickening and marked contrast enhancement of several mid jejunal loops compatible with shock bowel syndrome	N/A	Lap belt webbing/extension of body from deploying passenger side air bag
Subtle pancreatic laceration cannot be excluded	N/A	Lap belt webbing/extension of body from deploying passenger side air bag
Focal atelectasis or infiltrate in the left lower lobe with minimal focal atelectasis or infiltrate in the posterior right lower lobe	N/A	Lap belt webbing/extension of body from deploying passenger side air bag

RIGHT FRONT PASSENGER KINEMATICS

The right front passenger of the 1995 Dodge Caravan was a 7 year old female. Initially, the child passenger was reported by police as unrestrained, however, during the course of this investigation, it was determined that the child was wearing the manual 3-point lap and shoulder belt system, however, usage of the system was improper. Belt usage was determined from statements made by her siblings who were seated in the second seat of the Dodge Caravan at the time of the crash, the reconstruction of her kinematic pattern and injury mechanisms, and the resultant injuries sustained by the occupant during the crash.

The child occupant was in a seated posture in the right front position of the Caravan with the seat track adjusted to the full rearward position and the seat back reclined to approximately 20 degrees (second position from vertical). The 3-point manual lap and shoulder belt system at this position consisted of a continuous loop belt webbing with a fixed crossbar-type latchplate. The belt system retracted into an outboard mounted dual mode, inertia and belt sensitive locking retractor. The B-pillar mounted D-ring was adjustable with six detents for the vertical adjustment heights. The right front D-ring was adjusted to the top position at the time of vehicle inspection. There was no loading evidence on the belt webbing or system hardware, however, the latchplate did yield scratch marks which indicated frequent usage prior to the crash.

RIGHT FRONT PASSENGER KINEMATICS (CONT'D.)

The passenger's brother, who was seated on the left side of the second seat, reported to the investigating police officer that he observed his sister in the right front of the vehicle with the seat belt positioned behind her. Interview data obtained from the passenger's siblings identified several habits that she had developed regarding seat position and belt usage. All family members concluded that the occupant and her brothers had developed dedicated seat belt habits from birth, initially restrained in child safety seats then into the vehicle restraint systems as the children grew out of the safety seat requirements. It was further reported that the children would automatically buckle-up as they entered a vehicle without the need of advisement. The brothers related that this occupant had a tendency to sit forward on the seat cushion with her back off of the seat back support. This position could be supported by the length of the child's femurs with respect to the depth of the seat cushion. Typically a child's femur is shorter than the depth of the vehicle's seat cushion and as a result, the legs extend forward over the edge of the cushion. The brothers related that this child occupant would wear the 3-point lap and shoulder belt system, however she would place the shoulder belt webbing behind her back to prevent the belt from crossing her face. The brother stated that he placed the shoulder belt in a similar manner at a younger age, but as he grew, he could wear the belt systems in the designed configuration with the shoulder belt webbing over his outboard shoulder.

In addition to the statements obtained to support the above scenarios, medical data indicated the possibility of abdominal injuries that resulted from lap belt usage. The child occupant was fatally injured, however, the family declined an autopsy. Due to the nature of the child occupant's injuries, and the probability of brain death, the medical facilities did not investigate the probability of abdominal injuries that were suspected by initial CT scans of the abdomen and pelvis. These injuries included a possible pancreatic laceration, a jejunal hematoma, and focal atelectasis or infiltrate of the lower lobes of the lungs, bilaterally. Therefore, based on the possibility of abdominal injury and the statements of family members, the following reconstruction of the child occupant's position, restraint use, and kinematic pattern was determined in conjunction with contact evidence within the vehicle.

The child passenger was seated in a normal posture on the seat cushion and was probably slightly forward pre-event. She was wearing the manual 3-point lap and shoulder belt system improperly with the shoulder belt webbing positioned behind her back, therefore the occupant received restraint benefit from only the lap belt portion of the system. Immediately prior to impact, the driver of the vehicle braked with moderate force in an attempt to avoid the impending crash. In response to the braking force, the child occupant initiated a forward trajectory and loaded the lap belt webbing of the restraint system. As a result of lap belt loading, the occupant's head and upper torso continued forward as her pelvic and lower extremities were restrained by the lap belt. The belt loading allowed the occupant's head and upper torso to pitch forward and downward as these body regions jackknifed over the lap belt. This movement placed the occupant's head and neck within a close proximity to

RIGHT FRONT PASSENGER KINEMATICS (CONT'D.)

the passenger side air bag module cover which was located at the leading edge of the upper instrument panel. The horizontal distance between the leading edge of the air bag module cover flap and the seat back was 81.3 cm (32.0"). This measurement was recorded at a height of 35.6 cm (14.0") above the seat cushion. While the occupant was in this forward position, the Dodge Caravan impacted the left side of the Chevrolet Lumina APV which resulted in a sufficient longitudinal deceleration and subsequent deployment of the Caravan's driver and passenger side air bags. The out-of-position occupant subsequently initiated a forward trajectory in response to the frontal impact force.

The deploying passenger side air bag initially contacted the underside of the child occupant's chin and wrapped around onto her cheeks bilaterally resulting in a band-like abrasion (refer to Photograph No. 71). This contact rotated the head in an upward direction (hyperextension) and exposed the anterior neck to the deploying bag. The bag contacted the anterior neck area and abraded the neck circumferentially 180 degrees. The abrasion extended onto the anterior mid chest and left shoulder area. In addition to the abrasions, the occupant sustained a closed head injury with right parietal and occipital scalp swelling, an intraventricular bleed at the fourth ventricle, subarachnoid hemorrhage, and cerebral edema. Brain death also resulted from the air bag contact and hyperextension. Although not medically confirmed, the child occupant sustained possible further injuries which included a transverse fracture of the inferior aspect of C₂, C₂/C₃ subluxation, and a spinal cord injury. As the air bag continued to expand, it deflected the child occupant in an upward direction as she continued to move forward. Her forward position and subsequent movement altered the normal deployment pattern of the passenger side air bag. In addition to expanding against the occupant, the passenger side air bag expanded against the module assembly. The forward and upward trajectory of the occupant allowed the bag to contact the instrument panel, windshield, header, right sunvisor, and the rear view mirror.

The child occupant was accelerated vertically by the bag, however, the lap belt restricted her vertical trajectory. There was no direct injury (i.e., abrasion or contusion) associated with lap belt loading. CT scans indicated the possibility of internal injuries which would have been attributed to lap belt loading. These possible internal injuries included a jejunal hematoma with diffuse dilatation of the small bowel with irregular mucosal fold thickening and marked contrast enhancement of several mid jejunal loops compatible with shock bowel syndrome, a subtle pancreatic laceration, and focal atelectasis or infiltrate of the lower lobes of the lungs bilaterally.

The child occupant was displaced rearward and came to rest lying across the interior of the vehicle with her head resting on the inboard armrest of the driver's seat. Her pelvis and lower extremities remained on the right front seat cushion with the lap belt positioned around her waist. Her final rest position was confirmed by a blood transfer noted to the armrest and from statements of the rear seated occupants.

RIGHT FRONT PASSENGER KINEMATICS (CONT'D.)

The driver repositioned the child occupant to the right and unbuckled her restraint system. He stated that he had difficulty removing the belt system since the shoulder belt (unaware to him) was positioned behind her back. The driver removed the child from the vehicle and placed her on the pavement adjacent to the vehicle. She was subsequently moved to the grassy area adjacent to the roadway and was administered CPR by a physician who stopped at the scene to offer assistance. She was transported by ambulance to a local hospital where her condition was evaluated and diagnosed. The occupant was transferred to a local trauma center where the brain death was confirmed. She subsequently expired approximately 23 hours following the crash. The family had declined an autopsy, therefore complete injury data was not available.

LEFT REAR PASSENGER

Age/Sex:	9 year old male
Height:	144.8 cm (57.0")
Weight:	29.3 kg (65.0 lbs.)
Manual Restraint Usage:	3-point lap and shoulder belt system
Usage Source:	Vehicle inspection, interview data
Type of Medical treatment:	None, not injured

LEFT REAR PASSENGER KINEMATICS

This passenger was positioned on the left side of the two passenger second seat of the Dodge Caravan. He was probably in a normal posture at impact and properly restrained by the manual 3-point lap and shoulder belt system. At impact, he initiated a forward trajectory and loaded the belt webbing which prevented him from contact with interior components. As a result of belt usage, the left rear passenger was not injured.

RIGHT REAR PASSENGER

Age/Sex:	10 year old male
Height:	154.9 cm (61.0")
Weight:	36.0 kg (80 lbs.)
Manual Restraint Use:	3-point lap and shoulder belt system
Usage Source:	Vehicle inspection, interview data
Type of Medical Treatment:	None, not injured

RIGHT REAR PASSENGER KINEMATICS

The right side, second seat passenger was presumably in a normal seated position at impact. He was properly restrained by the 3-point lap and shoulder belt system. In response to the frontal impact sequence, the right rear occupant initiated a forward trajectory and loaded the manual belt webbing. There was no evidence of loading on the belt system or to the components located forward of his position. He was not injured as a result of the crash.

ATTACHMENT A

Selected Color Prints

**SELECTED PRINTS
CALSPAN CASE NO. 95-21
IMD**



1. Pre-crash trajectory of the 1995 Dodge Caravan.



2. Trajectory of the Dodge Caravan into the four-leg signalized intersection.



3. Approximate point of impact.



4. Lookback view of the ^d₁ Dodge Caravan's path of travel.



6. Pre-crash trajectory of the 1992 Chevrolet Lumina APV.



7. Continued approach of the Chevrolet Lumina APV.



8. Trajectory of the Lumina into the four-leg intersection.



9. Approximate impact location of the Chevrolet Lumina.



10. Lookback view of the Lumina's path of travel.



11. Frontal damage to the 1995 Dodge Caravan.



12. Close-up view of the frontal impact damage.



13. Direct contact damage across the full width of the bumper facia (separated).



14. Left front three-quarter view.



15. & 16. Profiles views of maximum crush at the **left front bumper corner**.



17. Left side view of the 1995 Dodge Caravan.



18. Left rear three-quarter view.



19. Right rear three-quarter view.



20. Right side view of the Dodge Caravan.



21. Right front three-quarter view.



22. Profile view of the right front corner area.



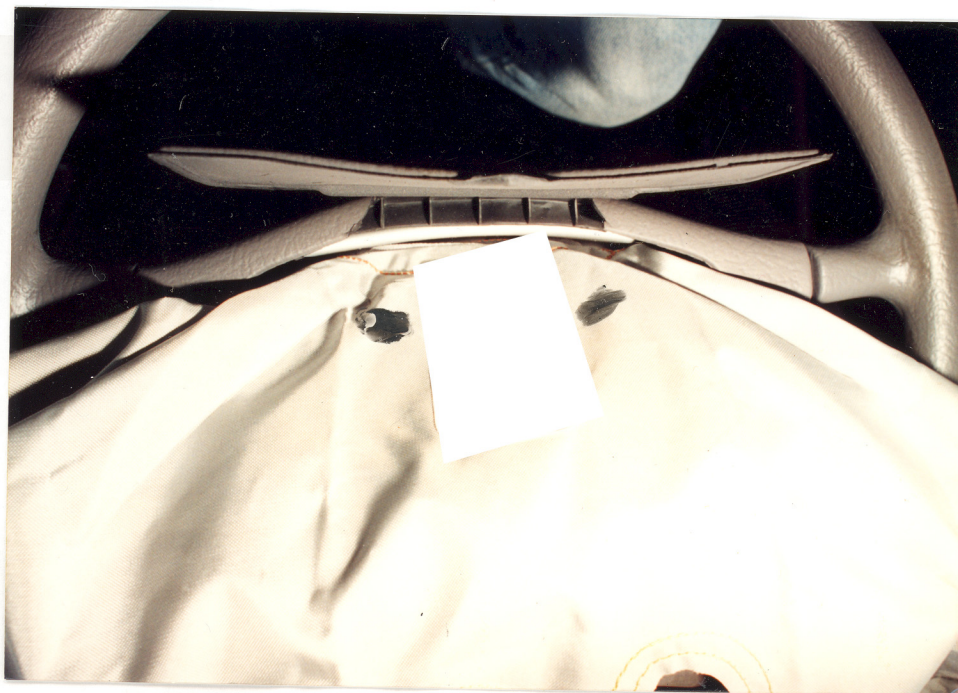
23. Overall view of the driver's compartment and deployed air bags.



24. Profile view documenting the driver's adjusted seat track position with respect to the steering assembly.



25. Perpendicular view of the symmetrical driver side air bag module cover flaps.



26. Bar coded identification label on driver's side air bag at the 12 o'clock position.



27. Stamped identification numbers at the 6 o'clock position of the driver's side air bag.



28. Overall view of the driver's side air bag from the rear seat area.



29. Vent ports and upper steering wheel rim (wheel rotated 180 degrees).



30. Driver's side knee bolster and exposed steering column assembly.



31. Energy absorbing steering column and left shear capsule (no compression).



32. Right shear capsule; elongated block, no compression.



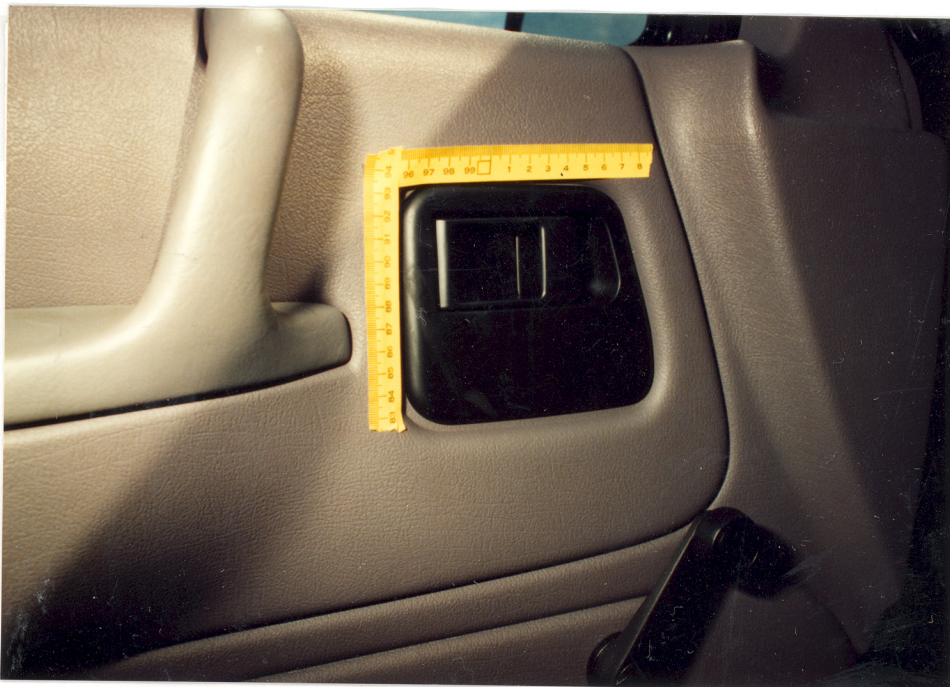
33. Driver's seat and stowed 3-point lap and shoulder belt system.



34. Driver's side latchplate; minimal routine usage wear marks.



35. Overall view of the driver's side interior door panel.



36. Probable driver left hand contact (scuff/smudge/possible tissue) to the door release lever and trim panel.



37. & 38. Overall views of the frontal interior surfaces, deployed air bags, and contact points.



39. Overall view (expanded) of the passenger side air bag.



40. Horizontal vinyl transfers on the right side of the passenger side air bag.



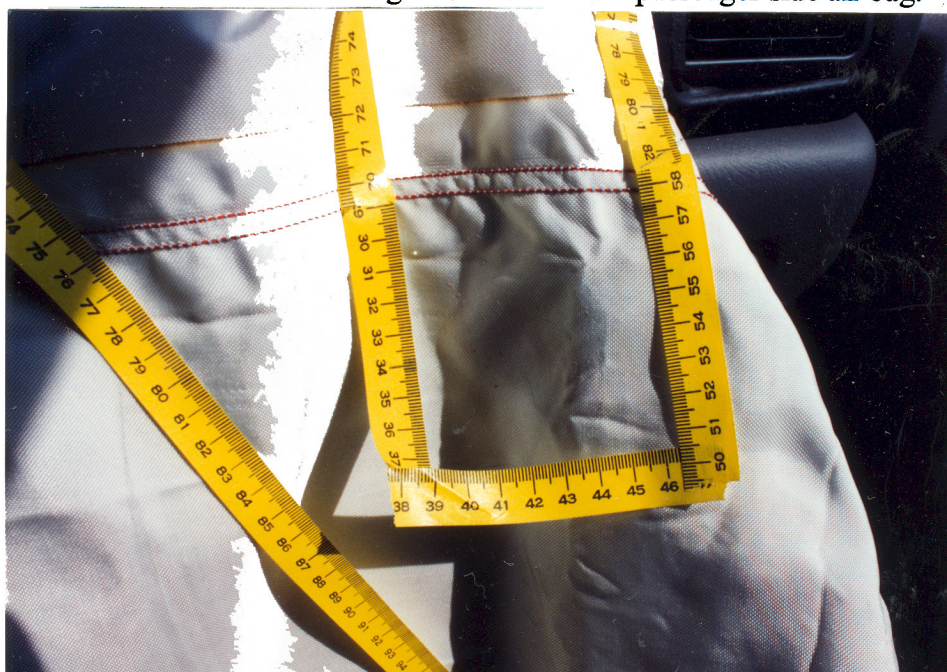
41. Top and right side view of the passenger side air bag.



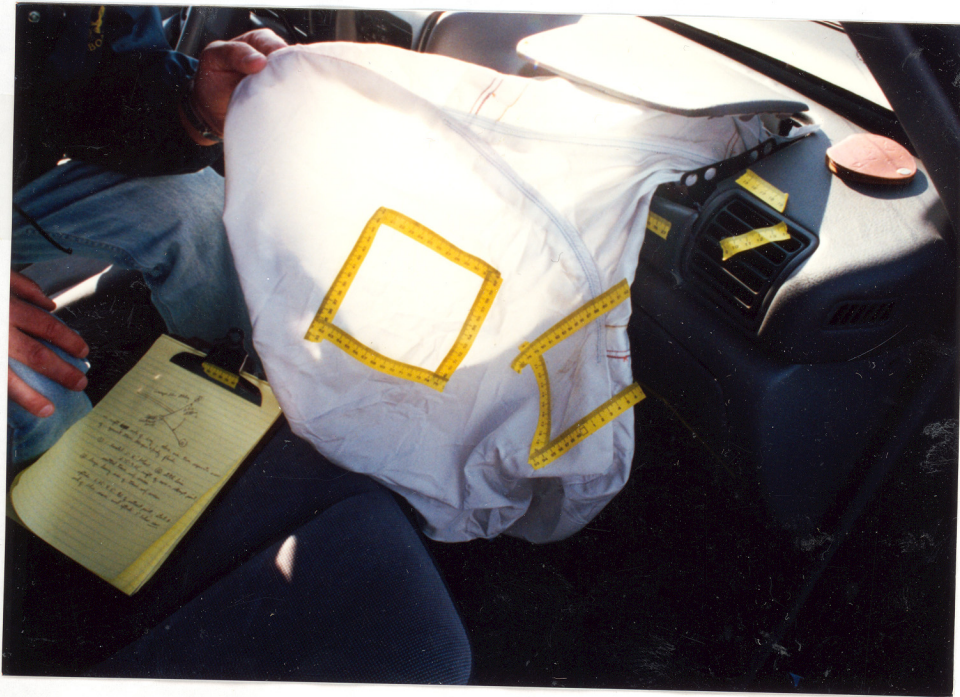
42. Longitudinally orientated gray vinyl transfers on left side of the passenger air bag.



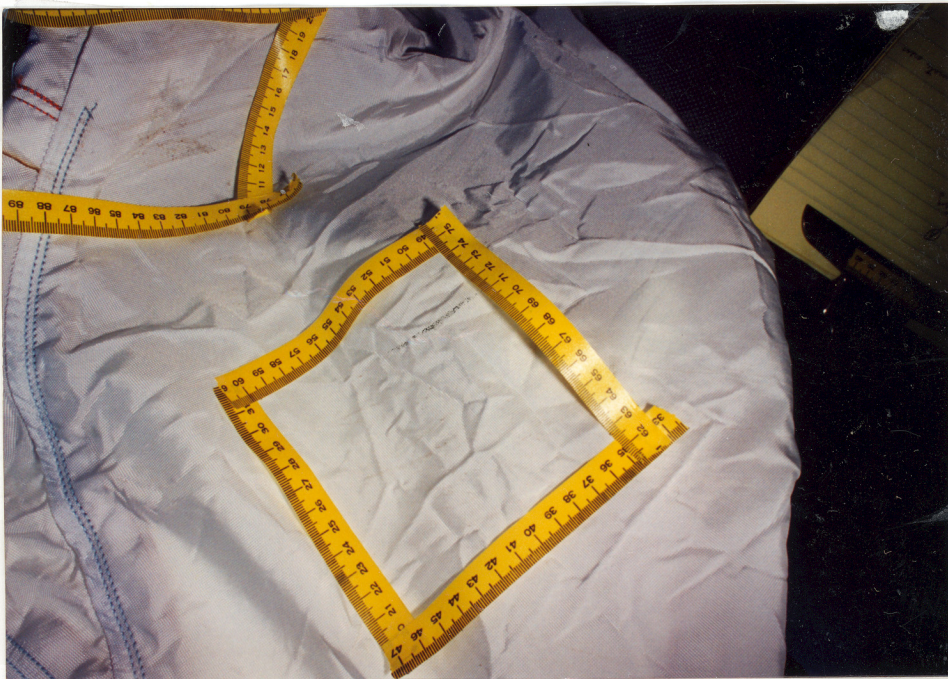
43. Tissue transfer on right side area of the passenger side air bag.



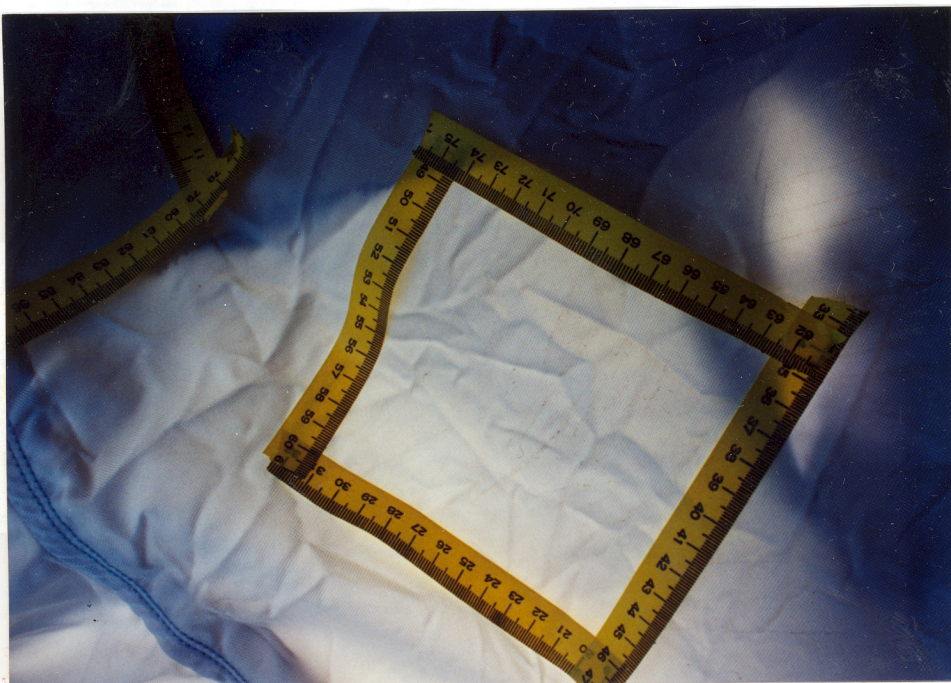
44. Close-up view of the above tissue transfer.



45. Additional tissue transfers on the right side panel of the passenger side air bag.



46. Close-up views of the above tissue transfers.



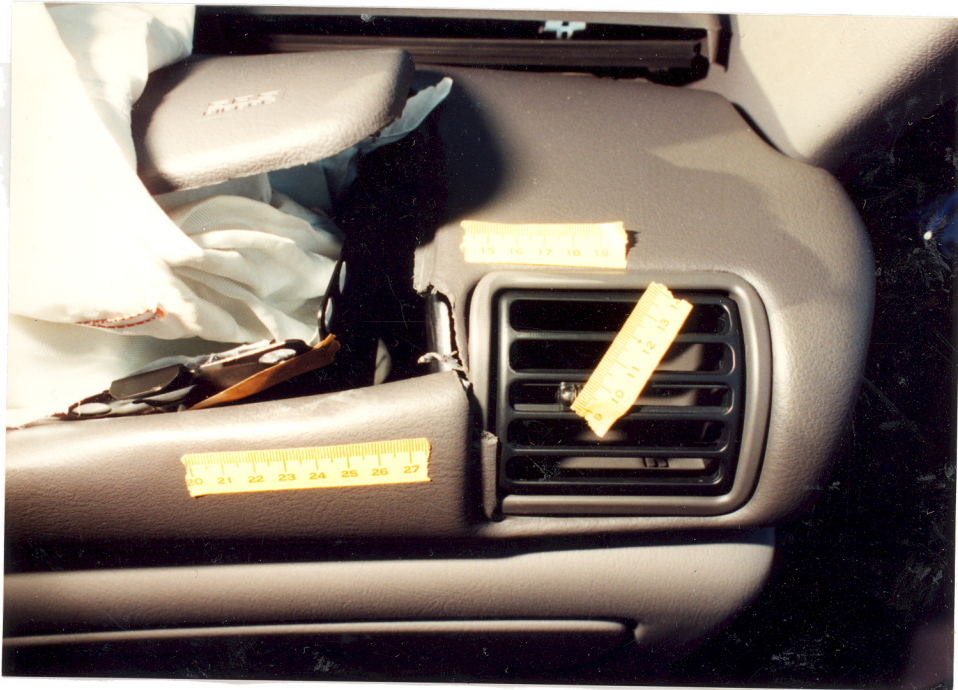
47. & 48. Additional close-up views of the right side tissue transfers.



49. Outward bowing of the lower and side surfaces of the passenger side air bag module mounting flange.



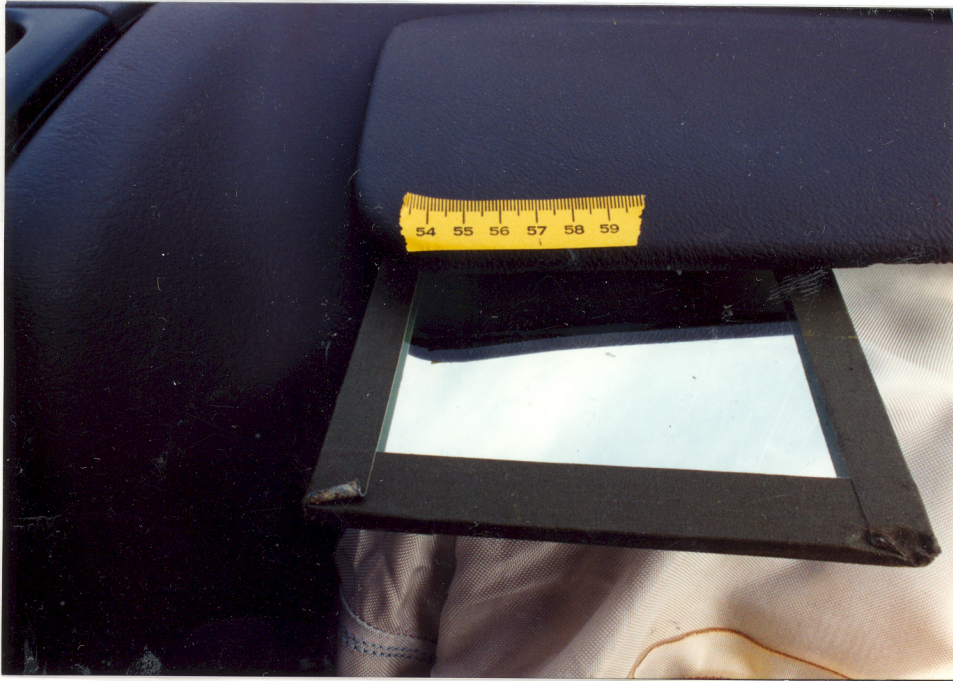
50. Lower flange bowed outward 2.5 cm (1.0") into mid instrument panel.



51. Air bag fabric transfers on deformed mid panel and right vent louver.



52. Close-up view of the air bag transfers on the right vent louver.



53. Underside view of the left corner of the passenger side air bag module cover flap.



54. Fracture of the right mid mounted vent louver with tissue transfer located above.



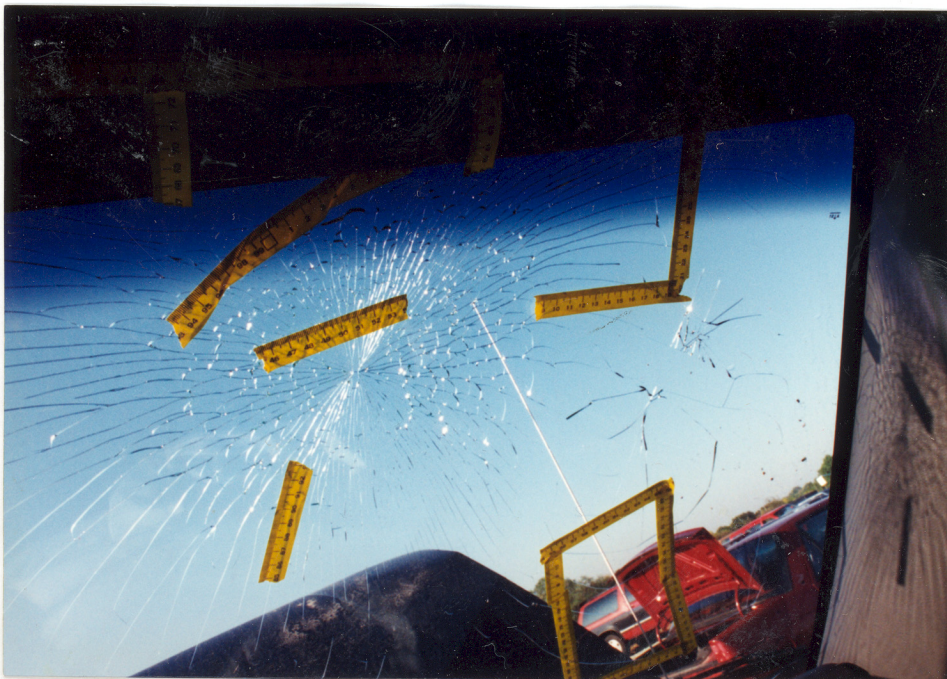
5. Possible foot scuff marks from the right front passenger on the glove box door.



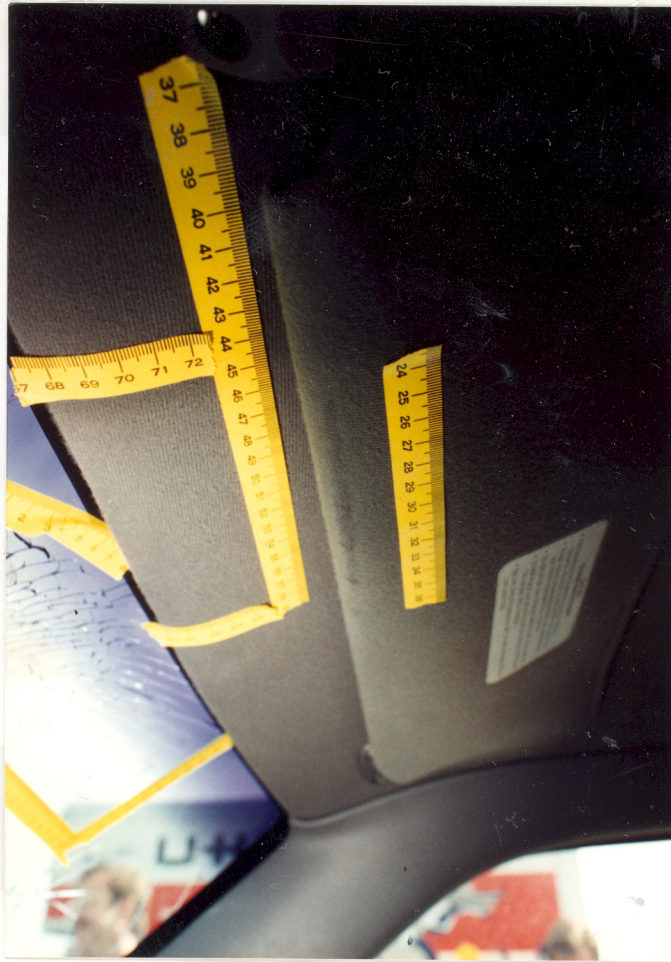
56. Crack and air bag contact to the laminated windshield.



57. Probable tissue transfer on the lower right quadrant of the windshield.



58. Air bag fabric transfer across the top of the windshield adjacent to the header.



59. Abraded sunvisor and headliner from air bag contact.



60. Fractured and separated rear view mirror from air bag contact.



61. Close-up view of the cracked mirror.



62. Air bag fabric transfer to the right side of the rear view mirror.



63. Close-up view of the fabric transfer.



64. Mirror scuff across the left side of the windshield.



65. Exterior view of the mirror scuff across the left side of the windshield.



66. Second seat of the Dodge Caravan and final rest position of the right front passenger.



67. Blood transfer of the right (inboard) armrest of the driver's seat.



68. Close-up view of the blood transfer from final rest of the right front passenger's head/neck.



69. Warning label on the right front sunvisor of the Dodge Caravan.



70. Second seat and manual 3-point lap and shoulder belts.

CAUTION:

SENSITIVE PHOTOGRAPHS

“GRAPHIC” PHOTOGRAPHS AND IMAGES

The following “GRAPHIC” Photographs and Images have been removed from this case.

Photo # 71-73

If you would like a copy of these photographs and/or images please write to:

MARJORIE SACCOCCIO
VOLPE NATIONAL TRANSPORTATION SYSTEMS CENTER
55 BROADWAY
CAMBRIDGE, MA 02142

In the body of your request please include the case, photograph and image number(s).



74. Frontal view of the 1992 Chevrolet Lumina APV.



75. Left front three-quarter view of the Lumina APV.



76. Direct contact damage on the left side area of the Lumina APV.



77. Left side view of the Lumina APV.



78. Close-up view of the direct contact damage.



79. Lateral displacement of the left sill of the Lumina.



80. Right rear three-quarter view of the Lumina APV.



81. Interior view of driver knee contact to the lower instrument panel.

ATTACHMENT B

Police Accident Report

State of Maryland Motor Vehicle Accident Report

BEST AVAILABLE COPY

REPORT NO [REDACTED]	PAGE OF 17	ACCIDENT DATE 9/18/20	ACCIDENT TIME 18:20	REPORT TYPE <input checked="" type="checkbox"/> FATAL <input type="checkbox"/> INJURY <input type="checkbox"/> PDO <input type="checkbox"/> HIT & RUN <input type="checkbox"/> NON-TRAFFIC	RESEARCH	LOCAL CASE NUMBER [REDACTED]	LOCAL CODES [REDACTED]	PHOTOS? <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES
INVESTIGATING OFFICER ID [REDACTED]	AGENCY AND AREA [REDACTED]	SUPERVISING OFFICER ID [REDACTED]	REVIEWER ID # [REDACTED]	CODE - AND - NAME OF MUNICIPALITY [REDACTED] City	COUNTY [REDACTED]			
RD CHAR 01 RTE 100 +	ACCIDENT OCCURRED ON T-00 +	ROAD NAME [REDACTED] Ave	IN LANE 01	TRAF SIG <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	ON RAMP <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES	Ramp Number 1 N-W 2 W-N 3 E-N 4 N-E 5 S-E 6 E-S 7 W-S 8 S-W 9 Other	IN INTERSECTION <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES	
RD COND 01	INT-RTE T-00 -	INTERSECTING ROAD NAME or Log Mile Reference Manual description [REDACTED] Ave	MILEPT 1.1	DIR [REDACTED]	Dist. of Acc if INT-RTE/Ref. & Dir. [REDACTED]			
RD DIV 01	ACCIDENT DIAGRAM Show & Label: Roads, Traffic Units, the Travel Direction consistent with the Log Mile Reference Manual, and Movement of Traffic Units.	31 NORTH [REDACTED]	DESCRIBE ACCIDENT briefly: identify units by numbers. Also identify the following: a) the OBJECT DAMAGED & NATURE OF DAMAGE. Property other than vehicles; and b) the NAME & ADDRESS OF OWNER when applicable.					
SFR COND 02	[REDACTED]		V ¹ Southbound on [REDACTED] Ave And when at [REDACTED] Ave Collided with V ² that was East Bound on [REDACTED] Witness's STATE V ¹ Failed to obey Automatic Signal					
CH ZONE <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES	JUNCTN 02	EVENT-1 01	EVENT-2 38	FIX OBI 39	COLL TY 17	LIGHT 04	WEATHER 01	
UNIT # 01	NAME (First, Middle, Last) [REDACTED]	SEX 45	UNIT # 02	NAME (First, Middle, Last) [REDACTED]	SEX 45			
TYPE OF UNIT <input checked="" type="checkbox"/> DRIVER <input type="checkbox"/> PED	ADDRESS (No., Street, City, State, Zip) [REDACTED]	TEL <input type="checkbox"/> Work <input type="checkbox"/> Res [REDACTED]	TYPE OF UNIT <input checked="" type="checkbox"/> DRIVER <input type="checkbox"/> PED	ADDRESS (No., Street, City, State, Zip) [REDACTED]	TEL <input type="checkbox"/> Work <input type="checkbox"/> Res [REDACTED]			
MOVEMENT 01	CONDITN 01	SUBST 01	TEST 53	RESULT 34	FOR PERS ONLY [REDACTED]	AGE 30	TYPE 56	LOCATN 57
SPEED LIMIT 30	SAF. EQU 61	EQ PROB 62	EJECT 63	CITATION NUMBER (S) [REDACTED]	FAULT <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES	MOVEMENT 01	CONDITN 01	SUBST 01
GOING 02	DRIVER'S LICENSE NUMBER [REDACTED]	STATE Md	CLASS C	CONTINU 02	DR DATE OF BIRTH [REDACTED]	IRREGULAR CONDITION <input type="checkbox"/> PARKED <input type="checkbox"/> CAUGHT FIRE <input type="checkbox"/> HIT & RUN <input type="checkbox"/> DRIVERLESS	HAZ MAT NUMBER [REDACTED]	
BODY TY 21	COMMER. VEHICLE ONLY <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	U.S. DOT NUMBER [REDACTED]	ICC NUMBER [REDACTED]	BODY TY 21	COMMER. VEHICLE ONLY <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	U.S. DOT NUMBER [REDACTED]	ICC NUMBER [REDACTED]	
OWNER OR CARRIER NAME (Write "SAME" if Driver) Same # 44	OWNER/CARRIER ADDRESS Same # 47	TOWED VEH (S) [REDACTED]	OWNER OR CARRIER NAME (Write "SAME" if Driver) Same # 44	OWNER/CARRIER ADDRESS Same # 47	TOWED VEH (S) [REDACTED]			
YEAR & MAKE OF VEHICLE 95 Dodge	MODEL Cavarian	1st IMPACT PT. 01	YEAR & MAKE OF VEHICLE 92 Chev	MODEL [REDACTED]	1st IMPACT PT. 15			
EXP YR & REGISTR # STATE Temp [REDACTED] 011021	AREAS DAMAGED [REDACTED]	INSURER [REDACTED]	EXP YR & REGISTR # STATE 96 [REDACTED] 131415	AREAS DAMAGED [REDACTED]	INSURER [REDACTED]			
VEHICLE ID NUMBER 2B 4G1125R	POLICY NUMBER [REDACTED]	VEHICLE ID NUMBER 1GNDU0619NT	POLICY NUMBER [REDACTED]					
DAM EXT 03	VEHICLE REMOVED BY [REDACTED]	VEHICLE REMOVED TO [REDACTED]	DAM EXT 03	VEHICLE REMOVED BY [REDACTED]	VEHICLE REMOVED TO [REDACTED]			
TRAFFIC UNIT # 01	SEATING POSITION 03	CODE all injured & uninjured PASSENGERS below. Use "W" for Witness in TRAF UNIT and SEAT columns. WRITE NAME & ADDRESS of Injured Passengers and Witnesses.	WITNESS telephone # [REDACTED]	SEX 99	AGE 100	SAFETY EQUIP 01	EQUIP PROB. 01	INJUR SEVER 05
02	03	[REDACTED]	[REDACTED]	02	085	01	01	03
W	W	[REDACTED]	[REDACTED]	01	024			
01	04	[REDACTED]	[REDACTED]	01	10	13	01	01
01	06	[REDACTED]	[REDACTED]	01	9	13	01	01
W	W	[REDACTED]	[REDACTED]	01	026			
01	01	[REDACTED]	[REDACTED]	02	022			
E UNIT # A	INJURED TAKEN TO [REDACTED]	INJURED TAKEN TO Hosp.	EMS RUN REPORT # 109	E UNIT # B	INJURED TAKEN BY [REDACTED]	INJURED TAKEN TO [REDACTED]	EMS RUN REPORT # 109	

POLICE DEPARTMENT

MARYLAND

TRAFFIC DIVISION
TRAFFIC INVESTIGATION SECTION
STATEMENT OF ACCIDENT
M76 / 374

Name in Full _____ Age 22 Phone _____
Address _____ St/Zip _____
Hgt. _____ Wgt. _____ Race W Sex F DOB _____ Dr/Exp. _____ Dr/Ed. _____
Op. Lic. # _____ Class _____ Restrict. _____
Occupation Unemployed Soc. Sec. # _____ Bus. Phone _____
Employer _____ Address _____
Veh. Year _____ Make _____ Model _____ Tag _____ State _____
Serial # _____ Mileage _____ Saf/Eqpt. _____
Owner _____ Address _____
Shop # _____ Call # _____ Badge # _____ Seq. # _____ Permit _____ Super _____
CC # _____ Acc/Time _____ Arr/Time _____ Towed By _____ Car # _____
Hospital _____ Ambulance _____
Referring to Accident at _____ Date/Time _____
Statement Taken at _____ Date/Time _____

I herewith make the following voluntary statement without persuasion, coercion, or promises of any kind. The following is true to the best of my knowledge.

I was a passenger in the right front seat of the vehicle being operated by [REDACTED] and was East Bound on [REDACTED] the I would say he was going about 10 m.p.h. as we had a red light as we approached the light and was about 20-30 feet from [REDACTED] St. When the light turned green for [REDACTED] the I glanced at the van that was sitting East Bound on [REDACTED] the waiting for the light. I didn't notice if directional signals were on this vehicle. It was still daylight out. The light turned from red to green before the van that was East

Witness _____

Signature in Full _____

Traffic Investigation Section
Statement of Accident — Continuation

Statement of _____

Bound STARTED into the intersection
I didn't pay a lot of attention if he STARTED
as soon as it changed or he delayed
I saw the South Bound vehicle as
it was coming thru the light I would
say it was going 30 m. P.H. maybe 25 m. P.H.
and didn't appear to slow up or attempt to
stop. It didn't appear to me he was
going to turn he appeared to be going
straight.

Q Did you observe seat belt usage?

A Only the East Bound car and they
didn't have them on. The person who
was in the passenger seat was partly ejected
thru the broken window.

Witness _____ Signature in Full _____

on [REDACTED] 1/95 at 8:20 PM V' a 1995 Dodge Van md Temp Tags
[REDACTED] owned & operated Southbound on [REDACTED] Street
By [REDACTED] Valid md lic [REDACTED] (c)
[REDACTED] () And when at [REDACTED] Ave failed to
 obey Automatic Signal (Witness's) and Collided with 1972
(Ford Illumina (Van) md lic [REDACTED] (owner & operator)
with Valid lic [REDACTED] / [REDACTED]

[REDACTED] WIFE [REDACTED] [REDACTED]
[REDACTED] md a passenger (unbelted) in the Right
Front Seat of V' was injured and Transported to
[REDACTED] Hospital in [REDACTED] # and later
transferred to [REDACTED] Hospital where she was
pronounced dead on 1/95 @ 17:05 Hrs By STAFF Doctor
[REDACTED]

[REDACTED]
Med. Examiner [REDACTED] notified
Police Service Clerk [REDACTED] notified.

All Charges pending conference with ASST STATES
ATTORNEY.

Left to kin mother [REDACTED] [REDACTED]
[REDACTED] will make arrangements.

No other Serious Injury.

POLICE DEPARTMENT
MARYLANDTRAFFIC DIVISION
TRAFFIC INVESTIGATION SECTION
STATEMENT OF ACCIDENT

Name in Full _____ Age 26 Phone _____
 Address _____ City _____ St/Zip _____
 Hgt. _____ Wgt. _____ Race 2 Sex M DOB _____ Dr/Exp. _____ Dr/Ed. _____
 Op. Lic. # _____ Class _____ Restrict. _____
 Occupation MED STUDENT Soc. Sec. # _____ Bus. Phone _____
 Employer Hosp. Address _____
 Veh. Year _____ Make _____ Model _____ Tag _____ State _____
 Serial # _____ Mileage _____ Saf/Eqpt. _____
 Owner _____ Address _____
 Shop # _____ Call # _____ Badge # _____ Seq. # _____ Permit _____ Super _____
 CC # _____ Acc/Time _____ Arr/Time _____ Towed By _____ Car # _____
 Hospital _____ Ambulance _____
 Referring to Accident at _____ Date/Time _____
 Statement Taken at _____ Date/Time _____

I herewith make the following voluntary statement without persuasion, coercion, or promises of any kind. The following is true to the best of my knowledge.

Q Did you witness the accident?
 A No I didn't. I was South Bound on _____ Street and as I _____ Ave I had a green light and then I noticed the accident which already happened. I stopped & went to render aid. Plaintiff had fluid coming from under the hood & was smoking. There was a subject near the car and she was called to call 911 and I told her to evacuate the vehicle as you was coming for the vehicle and I went to call 911 and returned and the child in the passenger seat was not

Witness _____ Signature in Full _____

Traffic Investigation Section
Statement of Accident — Continuation

Statement of:

Breathing Device I administered Rescue Breaths
About 3 minutes. A Nurse's [redacted] name
on the scene and released me. pupils fixed
& dilated at this point.

Q Did you see if the child was in a
seat belt?

A I do not know.

Q Do you know how long the accident
occurred prior to your arrival?

A I would guess less than a minute
for the people on the scene.

Q Can you add anything to this statement?

A The Driver of Vehicle #2 ([redacted])
Keep causing to run the light

Witness

Signature in Full

POLICE DEPARTMENT
MARYLANDPASSENGER V-1
MIDDLE BRK CH SEAT
LEFT SIDETRAFFIC DIVISION
TRAFFIC INVESTIGATION SECTION
STATEMENT OF ACCIDENT

Name in Full _____ Age 9 Phone _____

Address _____ City _____ St/Zip MD

Hgt. _____ Wgt. _____ Race W Sex M DOB _____ Dr/Exp. _____ Dr/Ed. _____

Op. Lic. # _____ Class _____ Restrict. _____

Occupation _____ Soc. Sec. # _____ Bus. Phone _____

Employer _____ Address _____

Veh. Year _____ Make _____ Model _____ Tag _____ State _____

Serial # _____ Mileage _____ Saf/Eqpt. _____

Owner _____ Address _____

Shop # _____ Call # _____ Badge # _____ Seq. # _____ Permit _____ Super _____

CC # _____ Acc/Time _____ Arr/Time _____ Towed By _____ Car # _____

Hospital _____ Ambulance _____

Referring to Accident at _____ Date/Time 8/5/2000

Statement Taken at Scene Date/Time 8/5/2000

I herewith make the following voluntary statement without persuasion, coercion, or promises of any kind. The following is true to the best of my knowledge.

① Are you injured as result of the accident?

No, the snake

② Were you wearing a safety belt?

Yes

③ What van were you in?

Ther blue one.

④ Where were you sitting at?

Middle thing of seats on left hand side?

⑤ What direction were you going?

This way (indicating south on _____ St); I think

⑥ What color was the traffic light?

Red, I think

Witness _____

Signature in Full _____

Traffic Investigation Section
Statement of Accident — Continuation

Statement of [REDACTED]

Q What happened in reference to the accident?

When we were driving along, I asked my client to change the channel, mix 106.5 and there was no nothing. About 2 seconds, then he looks up and her about 2 or 3 feet from the car and smashed into it and looks back to ask me if we were ok. My sister was had her head on the arm rest and blood on her neck.

Q Did you see what direction the other van was going?

My closer guess is it was coming this way
(Indicating east on [REDACTED] Ave, crossing [REDACTED])

Q Do you know how fast the vehicle you were in was going?

No

Q Anything else?

Not really really.

Witness [REDACTED]

Signature in Full [REDACTED]

POLICE DEPARTMENT
MARYLANDPASSENGER V-1
MIDDLE BENCH SEAT
RIGHT SIDETRAFFIC DIVISION
TRAFFIC INVESTIGATION SECTION
STATEMENT OF ACCIDENT
M76 / 374

Name in Full _____ Age 10 Phone _____

Address _____ City _____ St/Zip 221

Hgt. _____ Wgt. _____ Race W Sex M DOB _____ Dr/Exp. _____ Dr/Ed. _____

Op. Lic. # _____ Class _____ Restrict. _____

Occupation _____ Soc. Sec. # _____ Bus. Phone _____

Employer _____ Address _____

Veh. Year _____ Make _____ Model _____ Tag _____ State _____

Serial # _____ Mileage _____ Saf/Eqpt. _____

Owner _____ Address _____

Shop # _____ Call # _____ Badge # _____ Seq. # _____ Permit _____ Super _____

CC # _____ Acc/Time _____ Arr/Time _____ Towed By _____ Car # _____

Hospital _____ Ambulance _____

Referring to Accident at _____ Date/Time 1995

Statement Taken at _____ Date/Time 1995 / 1940 hr

I herewith make the following voluntary statement without persuasion, coercion, or promises of any kind. The following is true to the best of my knowledge.

- ① Are you injured in reference to this accident?
Yes No, my stomach hurts a little because of the smoke
- ② Were you wearing safety belts?
Yes
- ③ Where were you sitting at?
In middle seat, right side closest to the sliding door
- ④ What happened in reference to the accident?
My dad didn't see the light and was turning the channel and this guy was coming and he hit into him.
- ⑤ What direction were you going in?
This way (indicating southbound on [redacted] St.)

Witness _____ Signature in Full _____

Traffic Investigation Section
Statement of Accident — Continuation

Statement of [REDACTED]

⑥ When you say turning the channel, what do you mean?
He was pressing "Seek" to get [REDACTED]

⑦ What color was the van you were in?
Dark blue.

⑧ Anything else you wish to add?
The air bags worked, my sister was in the front seat,
the seat belt was behind her, she went under the dash.

(TRAFFIC)
⑨ Did you see what color the light was for your vehicle?
Red

⑩ Do you know how fast the van you were in was going?
No

⑪ Do you know what direction the other van was going?
That way. (I located part on [REDACTED])

Witness [REDACTED] Signature in Full [REDACTED]

POLICE DEPARTMENT
MARYLANDTRAFFIC DIVISION
TRAFFIC INVESTIGATION SECTION
STATEMENT OF ACCIDENT

Name in Full _____ 44 Phone _____
 Address _____ City _____ St/Zip _____
 Hgt. 5'5 Wgt. 121 Race 2 Sex F DOB _____ Dr/Exp. _____ Dr/Es. _____
 Op. Lic. # _____ Class 1 Restrict. None
 Occupation Teacher Soc. Sec. # _____ Bus. Phone _____
 Employer _____ Address _____
 Veh. Year 92 Make Chevy Model DL Tag _____ State md
 Serial # 12ND00617N Mileage _____ Saf/Eqpt. Not Used
 Owner Sam Address _____
 Shop # _____ Call # _____ Badge # _____ Seq. # _____ Permit _____ Super _____
 CC # _____ Acc/Time _____ Arr/Time _____ Towed By _____ Car # _____
 Hospital _____ Ambulance _____
 Referring to Accident at _____ Date/Time _____
 Statement Taken at _____ Date/Time _____

I herewith make the following voluntary statement without persuasion, coercion, or promises of any kind. The following is true to the best of my knowledge.

R/L _____

Q Were you injured?

A My left shoulder & head hurts (cut)
 & My Right breast

Q Were you wearing a seat belt?

A No and my mother didn't have one on

Q Explain what happened in the accident?

A I was going East Bound on _____ Ave.

and had to pass left and was getting ready to make a left turn onto _____ St

and would say I was going about 30 m. P.H

and I realized someone was coming from _____ Street thru the red,

Witness _____

Signature in Full _____

Traffic Investigation Section
Statement of Accident — Continuation

Statement of

light and I had felt the impact then
checked my mother.

Q How far were you from the light when
you first sawed and left sawed?

A I was several cars back when I saw

it was green and was entering the
intersection when I saw it was still green

Q Can you add anything to this statement?

A Only that I believe my speed was
slower maybe 10/15 m.p.h. as I slowed
prior to turning.

Witness: [redacted] DOB [redacted]
[redacted] K13035 - left leg -

Witness

Signature in Full

CRIME/INCIDENT
FORM 8518POLICE DEPARTMENT
MARYLAND

PERSON

PROPERTY

MISCELLANEOUS

19. UNIT NO.				20. POST		21. REPT AREA		22. STREET CODE		1. * COMPLAINANT/VICTIM'S NAME (LAST, FIRST, MIDDLE) (FIRM NAME IF BUSINESS)				2. * COMPLAINT NO.			
23. COMP'S OCCUPATION				24. HOURS OF EMPLOY.		25. SOBRIETY		7. * COMP/VICTIM'S SEX-RACE-AGE-DOB				8. * LOCATION OF OFFENSE/INCIDENT (ST. ADDRESS - ZIP)					
26. DESCRIBE LOC. OF OFFENSE OR TYPE OF PREMISE				9. REPORTING PERSON (FULL NAME)				SEX-RACE-AGE-DOB				10. RES. PHONE					
27. VEHICLE USED BY SUSPECTS				LICENSE NO.		STATE		YEAR		11. REPORTING PERSON'S ADDRESS (CITY - CO. - STATE - ZIP)				12. BUS. PHONE			
YEAR				MAKE		BODY		COLOR(S)		13. * DATE AND TIME OCCURRED				14. * DATE AND TIME REPORTED			
28. VEHICLE FROM WHICH THEFT OCCURRED				LICENSE NO.		STATE		YEAR		15. * CRIME/INCIDENT				16. * CLASSIFICATION			
29. WITNESS - PARENT - GUARDIAN				CODE: W-WITNESS; P-PARENT; G-GUARDIAN				17. LOC. GIVEN BY DISPATCHER AND IF REPORTED BY BLOCK WATCHER				18. COMPANION REPORT					
CODE				NAME (FIRST-MIDDLE-LAST)				SEX-RACE-AGE-DOB				RESIDENCE ADDRESS (CITY - CO. - STATE - ZIP)					
30. IDENTIFY SUSPECTS BY NO. (NAME - ADDRESS - SEX - RACE - AGE - DOB - HT - WT - EYES - HAIR - COMPLEX - CLOTHING - IDENTIFYING CHARACTERISTICS. IF ARRESTED INCLUDE ARREST NO. AND CHARGE)																	
(1)																	
(2)																	
31. TRADEMARKS OF SUSPECT(S) (ACTION/CONVERSATION)							32. MANNER AND DIRECTION OF ESCAPE							33. POINT OF ENTRY			
34. WEAPON/MEANS OF ATTACK (TOOL/MEANS USED)							35. METHOD USED TO COMMIT CRIME							36. TYPE OF PROPERTY TAKEN		37. TOTAL LOSS VALUE	
38. NATURE OF INJURIES AND LOCATION ON BODY - VICTIM'S CONDITION							39. VICTIM HOSPITALIZED - WHERE?							40. LOCATION OF VICTIM'S PROPERTY			
41. PERSON NOTIFIED IN CRIMINAL INVESTIGATION - SEQ NO. - TIME							42. NAME OF MEDICAL EXAMINER NOTIFIED							43. PROPERTY INV. NO.			
WORTHLESS DOCUMENT		44. DOCUMENT COLOR		45. DOCUMENT TYPE		46. DOCUMENT DATE		47. DOCUMENT NUMBER		48. NAME OF ACCOUNT							
		49. NAME AND NO. OF BANK		CITY/STATE		50. MADE PAYABLE TO		51. SIGNATURE ON FACE									
		52. REASON NOT HONORED		53. TYPE OF PROPERTY OR SERVICE OBTAINED		54. DOCUMENT AMOUNT		55. ACCOUNT NO.									
ITEM NO.		56. * NARRATIVE: (1) LIST PROPERTY FIRST (2) CONTINUATION OF ABOVE ITEMS (INDICATE "ITEM NUMBER" CONTINUED AT LEFT). INCLUDE ADDITIONAL VICTIMS, WITNESSES AND SUSPECTS AS OUTLINED ABOVE (3) DESCRIBE DETAILS OF INCIDENT (4) DESCRIBE EVIDENCE AND PROPERTY AND INDICATE DISPOSITION.															
		<p>On 1/95 A (H1) A Passenger in the Right front seat of a van being operated S/B on Street by her father and when at Ave Collided with a G/B van being operated by who was transported to Hospital.</p>															
57. SOLVABILITY FACTOR:		58. MI/ASSAIL RELATION										59. FOLLOW UP YES <input type="checkbox"/> NO <input type="checkbox"/>					
60. CRIME LAB NOTIFIED: <input type="checkbox"/> TIME: NAME: UNIT:		61. HOT DESK NOTIFIED: <input type="checkbox"/> TIME: NAME:															
62. VICTIM ASSISTANCE/INCIDENT INFORMATION FORM(S) PROVIDED: YES <input type="checkbox"/> NO <input type="checkbox"/> EXPLAIN:		63. COPIES TO:										64. TELETYPE NO.					
65. * REPORTING OFFICER (PRINT) SEQ NO. ASSIGNMENT		66. * STATUS: <input type="checkbox"/> OPEN <input type="checkbox"/> SUSPENDED <input type="checkbox"/> CLOSED										67. REFERRED		68. UCR DISPOS.			
69. * REPORTING OFFICER (PRINT) ASSIGNMENT ADDRESS, ZIP		70. * SUPERVISOR APPROVING SEQ NO.										71. REVIEWER					

* Required for Completion of Short Form Miscellaneous Incident Report.

TYPE OF REPORT: <input type="checkbox"/> Misc. Incident <input checked="" type="checkbox"/> Crime Against Persons <input type="checkbox"/> Crime Against Property	<input type="checkbox"/> Missing Person	4. <input checked="" type="checkbox"/> Continuation <input type="checkbox"/> Follow-Up	5. Complainant/Victim's Name (Last, First, Middle) (Firm Name if Business)	
	<input type="checkbox"/> Custody <input type="checkbox"/> Vehicle <input type="checkbox"/> Accident	6. Page 2 of 2	7. Crime/Incident	8. Crime/Incident Changed From

9. Date of Original Report 1/95	10. Date/Time of This Report 1/95 7:00 PM	11. Total Property Stolen \$ N/A	12. Total Property Recovered \$ N/A	13. Multiple Clearance <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
------------------------------------	--	-------------------------------------	--	---

Item No. 14. NARRATIVE: Record your activity and all developments in the case subsequent to last report. List property first. Describe any property recovered. Show disposition of recovered property and list property numbers. Enter names and arrest numbers of any persons arrested. Explain any crime/incident classification change. Recommend case status. If multiple clearance, list complaint numbers. Indicate "Item Number Continued" at left, if any.

And then to [redacted] Hospital where
she was pronounced dead at 1/95 @ 1705 Hrs
by Staff [redacted]
Mother of deceased [redacted]
[redacted] Med will make arrangements

Police Service [redacted] Clerk
Med Examiner [redacted]
Morgue # [redacted]

All Charges Pending Consultation with
Asst State Attorney.

15. Complaint No. Dispatched Under Other Than Original		16. Copies To:		17. Classification	
18. Reporting Officer (Print Name) [redacted]	Seq. No. [redacted]	Assignment 11U	19. Status: <input type="checkbox"/> Open <input type="checkbox"/> Suspended <input type="checkbox"/> Closed	20. Referred	21. Teletype No.
22. Reporting Officer (Signature) [redacted]	Assignment 11U	Address-Zip	23. Supervisor Approving	Seq. No.	24. Reviewer

POLICE DEPARTMENT

MARYLAND

N-100-35

TRAFFIC DIVISION
TRAFFIC INVESTIGATION SECTION
STATEMENT OF ACCIDENT

Name in Full _____ Age 21 Phone _____
 Address _____ City _____ St/Zip _____
 Hgt. _____ Wgt. _____ Race W Sex M DOB _____ Dr/Exp. _____ Dr/Ed. _____
 Op. Lic. # _____ Class _____ Restrict. _____
 Occupation Admission Soc. Sec. # _____ Bus. Phone _____
 Employer _____ Address _____
 Veh. Year _____ Make _____ Model _____ Tag _____ State _____
 Serial # _____ Mileage _____ Saf/Eqpt. _____
 Owner _____ Address _____
 Shop # _____ Call # _____ Badge # _____ Seq. # _____ Permit _____ Super _____
 CC # _____ Acc/Time _____ Arr/Time _____ Towed By _____ Car # _____
 Hospital _____ Ambulance _____
 Referring to Accident at _____ Date/Time 1/15
 Statement Taken at Scene Date/Time 1/15 7:40 PM

I herewith make the following voluntary statement without persuasion, coercion, or promises of any kind. The following is true to the best of my knowledge.

Driving Eastbound on
and as approaching I had a green
light and was going straight across
where I was at the intersection (indicating the
West Clark line) There was a blue station wagon
going east bound in the lane to my left
and apparently going to make a left turn as
my speed was not more than 10 mph and
his speed was about 10 m.p.h. The light
was green to the time I arrived but
know I was closing space on the Illumina
I didn't see him start from a stop position
The 2nd vehicle was Northbound on

Witness _____ Signature in Full _____

Traffic Investigation Section
Statement of Accident — Continuation

Statement of

[redacted] to be making a left
turn onto East Street on [redacted] Ave. I
also turned the speed prior to turning
as I didn't see this vehicle until they struck

Q What color was the light when the vehicle
struck?

A My light was still green
Q Can you state the speed of the
Southbound vehicle?

A No I can't

Q Can you add anything to this statement?
A No

Witness

Signature in Full

POLICE DEPARTMENT
MARYLAND

E.O.D. _____

TRAFFIC DIVISION
TRAFFIC INVESTIGATION SECTION
STATEMENT OF ACCIDENT

Name in Full _____ Age 7 Phone _____
Address _____ Rd _____ City _____ St/Zip _____
Hgt. _____ Wgt. _____ Race _____ Sex _____ DOB _____ Br/Exp. _____ Dr/Ed. _____
Op. Lic. # _____ Class _____ Restrict. _____
Occupation _____ Soc. Sec. # _____ Bus. Phone _____
Employer _____ Address _____
Veh. Year _____ Make _____ Model _____ Tag _____ State _____
Serial # _____ Mileage _____ Saf/Eqpt. _____
Owner _____ Address _____
Shop # _____ Call # _____ Badge # _____ Seq. # _____ Permit _____ Super _____
CC # _____ Acc/Time _____ Arr/Time _____ Towed By _____ Car # _____
Hospital _____ Ambulance _____
Referring to Accident at _____ Date/Time _____
Statement Taken at _____ Date/Time _____

I herewith make the following voluntary statement without persuasion, coercion, or promises of any kind. The following is true to the best of my knowledge.

INSURANCE INFORMATION -- COMPANY _____

POLICY # _____

MOTHER - _____ (BIOLOGICAL
MOTHER OF CHILD.)

OFF - _____ TRANSPORTED FATHER &
REPORTS STATEMENT TO THE
EFFECT THAT HE RAN THE
RED LIGHT

CAT SCAN - CRITICAL - TRANSFERRED FROM
UNCONSCIOUS

Witness _____

B-18

Signature in Full _____

MILES FATAL ACCIDENT REPORT
SEND TO: 1 FA 2 3 4 5
TO: MSP
FROM: City

TIME DATE PAGE 01
FILE 03 MSG-NO
TRAFF ☒ NON-TRAFF TERM-ID:
OPER/AUTH:

KILLED: ☒ INJURED:
***** DATE 95 AND TIME 18²⁰ OF ACCIDENT *****

LOCATION: E Ave

ROAD/WEATHER COND: (Clear) Dry (02)
TYPE OF ACCIDENT: (VAN (21) vs VAN (21))
PROB. CAUSE: Automated Vehicle Violation (#13 FAI to crazy TRAFFIC)

MED. EXAM: City
DECEASED: (MUST BE AT LEAST ONE) NO 1 PEDESTRIAN? NO
FULL NAME: RACE: 2 SEX: F
DOB: 80 ADDRESS: IN VEH NO 1 RELATIVES NOTIFIED: YES
SEATING POS: 03 (2 from) EXPLAIN Y/N: mother IF NOT, WOULD HAVE LESSENER? YES
SAFETY EQUIP. IN USE: No P/N

MILES FATAL ACCIDENT REPORT (CONT.) TIME DATE PAGE 02
DECEASED: NO OR SERIOUSLY INJURED: NO OR N/A PEDESTRIAN?
FULL NAME: RACE: SEX:
DOB: ADDRESS: IN VEH NO RELATIVES NOTIFIED:
SEATING POS: IF NOT, WOULD HAVE LESSENER?
EXPLAIN Y/N: PEDESTRIAN?
SAFETY EQUIP. IN USE: RACE: SEX:
DECEASED: NO OR SERIOUSLY INJURED: NO OR N/A
FULL NAME: IN VEH NO RELATIVES NOTIFIED:
DOB: ADDRESS: IF NOT, WOULD HAVE LESSENER?
SEATING POS: PEDESTRIAN?
EXPLAIN Y/N: RACE: SEX:
SAFETY EQUIP. IN USE:

VEHICLES(S) INVOLVED: TOTAL NO 2
VEH: NO 1 MAK Dodge MOD (Temp) YR 95 LIC ST MD VEH TYP VAN (21)
DR. NAME/ADDR: CONTRB. FACTORS: ALCOHOL SPEED DRIVER ERR
RACE 2 SEX M DOB 52 CONTRB. FACTORS: ALCOHOL SPEED DRIVER ERR
VEH: NO 2 MAK Chevy MOD YR 92 LIC ST MD VEH TYP VAN 21
DR. NAME/ADDR: CONTRB. FACTORS: ALCOHOL SPEED DRIVER ERR P/N
RACE 2 SEX F DOB 20 CONTRB. FACTORS: ALCOHOL SPEED DRIVER ERR P/N

MILES FATAL ACCIDENT REPORT (CONT.) TIME 18²⁰ DATE PAGE 03
WAS TRUCK INVOLVED? NO TYPE LOAD/CARGO:
SUMMARY-RESUME/DIRECT. OF TRAVEL/OTHER INFO
(USE THIS AREA AND REVERSE SIDE FOR SUMMARY. BE SURE /S/ LINE IS COMPLETED.)

/S/
MESSAGE-ENDS

See Reverse Side

BEST AVAILABLE COPY

CC#	[REDACTED]	T/C	[REDACTED]	[REDACTED]
LAB#		AC#	[REDACTED]	[REDACTED]

RESPONSIBLE CMD **TRAFFIC DIVISION** 

SUBMITTING OFFICER	RANK	SEO#	CMD
	OFF		TRAFFIC DIVISION

CLAIMANT

STREET ADDRESS

WHITE

NO ITEMS FOLLOW.

SIGNATURE RECEIVING PROPERTY OFFICER	DATE RECEIVED	TOTAL MONEY RECEIVED	TOTAL ITEMS
		\$. 00	1

[REDACTED] 95
[REDACTED]
[REDACTED]
[REDACTED]
A [REDACTED] called in reference to
the accident on [REDACTED] 195. She needs the
license belonging to [REDACTED] and the registration
for getting the van.

Her number is [REDACTED] - [REDACTED] - she will
be home until 1130 hours on the 24th.

[REDACTED]

POLICE DEPARTMENT
[REDACTED] MARYLAND

E.O.D. [REDACTED]

TRAFFIC DIVISION
TRAFFIC INVESTIGATION SECTION
STATEMENT OF ACCIDENT

Name in Full [REDACTED] Age 45 Phone [REDACTED]
 Address [REDACTED] City [REDACTED] St/Zip [REDACTED]
 Hgt. 6'2" Wgt. 173 Race 2 Sex M DOB [REDACTED] Dr/Exp. [REDACTED] Dr/Ed. [REDACTED]
 Op. Lic. # [REDACTED] Class C Restrict. [REDACTED]
 Occupation [REDACTED] Soc. Sec. # [REDACTED] Bus. Phone [REDACTED]
 Employer [REDACTED] Address [REDACTED]
 Veh. Year [REDACTED] Make [REDACTED] Model [REDACTED] Tag [REDACTED] State [REDACTED]
 Serial # [REDACTED] Mileage [REDACTED] Saf/Eqpt. [REDACTED]
 Owner [REDACTED] Address [REDACTED]
 Shop # [REDACTED] Call # [REDACTED] Badge # [REDACTED] Seq. # [REDACTED] Permit [REDACTED] Super [REDACTED]
 CC # [REDACTED] Acc/Time [REDACTED] Arr/Time [REDACTED] Towed By [REDACTED] Car # [REDACTED]
 Hospital [REDACTED] Ambulance [REDACTED]
 Referring to Accident at [REDACTED] Date/Time [REDACTED]
 Statement Taken at [REDACTED] Date/Time [REDACTED]

I herewith make the following voluntary statement without persuasion, coercion, or promises of any kind. The following is true to the best of my knowledge.

INSURANCE INFORMATION -- COMPANY

POLICY #

MEDIC - RESP. ADDRESS AT SCENE
 MEDIC RESTORE / LOST FULL ADDRESS

"IT'S MY FAULT. GOD GAVE ME THAT
 LITTLE GIRL TO TAKE CARE OF AND I
 RAN THE RED LIGHT. GOD HELP ME.
 GOD TAKE CARE OF THAT LITTLE GIRL."
 "I AM GUILTY."

ABOVE AMONG OTHER RANDOM STATEMENTS

Witness [REDACTED] Signature in Full [REDACTED]

Traffic Investigation Section
Statement of Accident — Continuation

Statement of FROM

TOO EMOTIONALLY UPSET TO TAKE
A FORMAL STATEMENT.

AT 2100 HRS CURRENT
WIFE AGREED TO EMERGENCY
COMMITMENT FOR [REDACTED].
NOT RATIONAL AND HE HAD
WORKED HIMSELF INTO SUCH A STATE
THAT HE NEEDED SEDATION.

[REDACTED]

BIOLOGICAL MOTHER (WIFE #1) W/ CHILD
WIFE #2 W/ [REDACTED]

Witness _____ Signature in Full _____

ATTACHMENT C

**CRASHPC Output
(Damage and Trajectory Algorithm)**

SUMMARY OF CRASHPC RESULTS USING DAMAGE

95-21

	SPEED CHANGE (DAMAGE)	SPEED CHANGE (LINEAR MOMENTUM AND SPINOUT)	IMPACT SPEED (LINEAR MOMENTUM AND SPINOUT)
VEHICLE #1			
TOTAL	16 KPH (10 MPH)	20 KPH (12 MPH)	35 KPH (22 MPH)
LONGITUDINAL	-16 KPH (-10 MPH)	-20 KPH (-12 MPH)	35 KPH (22 MPH)
LATITUDINAL	-4 KPH (-2 MPH)	-3 KPH (-2 MPH)	0 KPH (0 MPH)
PDOF ANGLE	13 DEGREES	9 DEGREES	
ENERGY DISSIPATED =	31307 JOULES (23088 FT-LB)	
VEHICLE #2			
TOTAL	15 KPH (10 MPH)	19 KPH (12 MPH)	32 KPH (20 MPH)
LONGITUDINAL	-5 KPH (-3 MPH)	-4 KPH (-3 MPH)	32 KPH (20 MPH)
LATITUDINAL	15 KPH (9 MPH)	18 KPH (11 MPH)	0 KPH (0 MPH)
PDOF ANGLE	-73 DEGREES	-76 DEGREES	
ENERGY DISSIPATED =	5925 JOULES (4369 FT-LB)	

SCENE INFORMATION

	VEHICLE #1	VEHICLE #2
IMPACT X-POSITION	.3 M. (1.0 FT.)	3.9 M. (12.8 FT.)
IMPACT Y-POSITION	8.4 M. (27.6 FT.)	8.5 M. (28.0 FT.)
IMPACT HEADING ANGLE	0 DEGREES	-95 DEGREES
REST X-POSITION	2.8 M. (9.3 FT.)	7.4 M. (24.3 FT.)
REST Y-POSITION	7.9 M. (26.0 FT.)	1.8 M. (6.0 FT.)
REST HEADING ANGLE	-31 DEGREES	-37 DEGREES
SIDE-SLIP ANGLE	0 DEGREES	0 DEGREES
DIRECTION OF ROTATION	CCW	CW
AMOUNT OF ROTATION	<360	<360

COLLISION AND SEPARATION

	VEHICLE #1	VEHICLE #2
COLLISION		
IMPACT X-POSITION	1.3 M. (1.0 FT.)	3.9 M. (12.8 FT.)
IMPACT Y-POSITION	8.4 M. (27.6 FT.)	8.5 M. (28.0 FT.)
IMPACT HEADING ANGLE	0 DEGREES	-95 DEGREES
SEPARATION (USING SPINOUT)		
US	15 KPH (10 MPH)	27 KPH (17 MPH)
VS	-3 KPH (-2 MPH)	18 KPH (11 MPH)
PSISD	-51 DEG/SEC	52 DEG/SEC
RELATIVE VELOCITY (LINEAR MOMENTUM)		
SPEED ALONG LINE THROUGH CG	35 KPH (22 MPH)	4 KPH (2 MPH)
SPEED ORTHOGONAL TO CG LINE	-1 KPH (-1 MPH)	31 KPH (19 MPH)
CLOSING VELOCITY (LINEAR MOMENTUM) =	39 KPH (24 MPH)	

DAMAGE DATA

	VEHICLE #1	VEHICLE #2
SIZE CATEGORY	4	3
STIFFNESS CATEGORY	7	3
VEHICLE WEIGHT	1660 KGS (3660 LBS)	1750 KGS (3858 LBS)
CDC	01FDEW2	10LYEW2
PDOF ANGLE	13 DEGREES	-73 DEGREES
CRUSH LENGTH	154 CM. (61 IN.)	160 CM. (63 IN.)
C1	26 CM. (10 IN.)	8 CM. (3 IN.)
C2	23 CM. (9 IN.)	7 CM. (3 IN.)
C3	9 CM. (4 IN.)	7 CM. (3 IN.)
C4	7 CM. (3 IN.)	5 CM. (2 IN.)
C5	5 CM. (2 IN.)	4 CM. (1 IN.)
C6	6 CM. (2 IN.)	0 CM. (0 IN.)
D	0 CM. (0 IN.)	59 CM. (23 IN.)
D'	-26 CM. (-10 IN.)	42 CM. (17 IN.)

(* INDICATES DEFAULT VALUE)

DIMENSIONS AND INERTIAL PROPERTIES

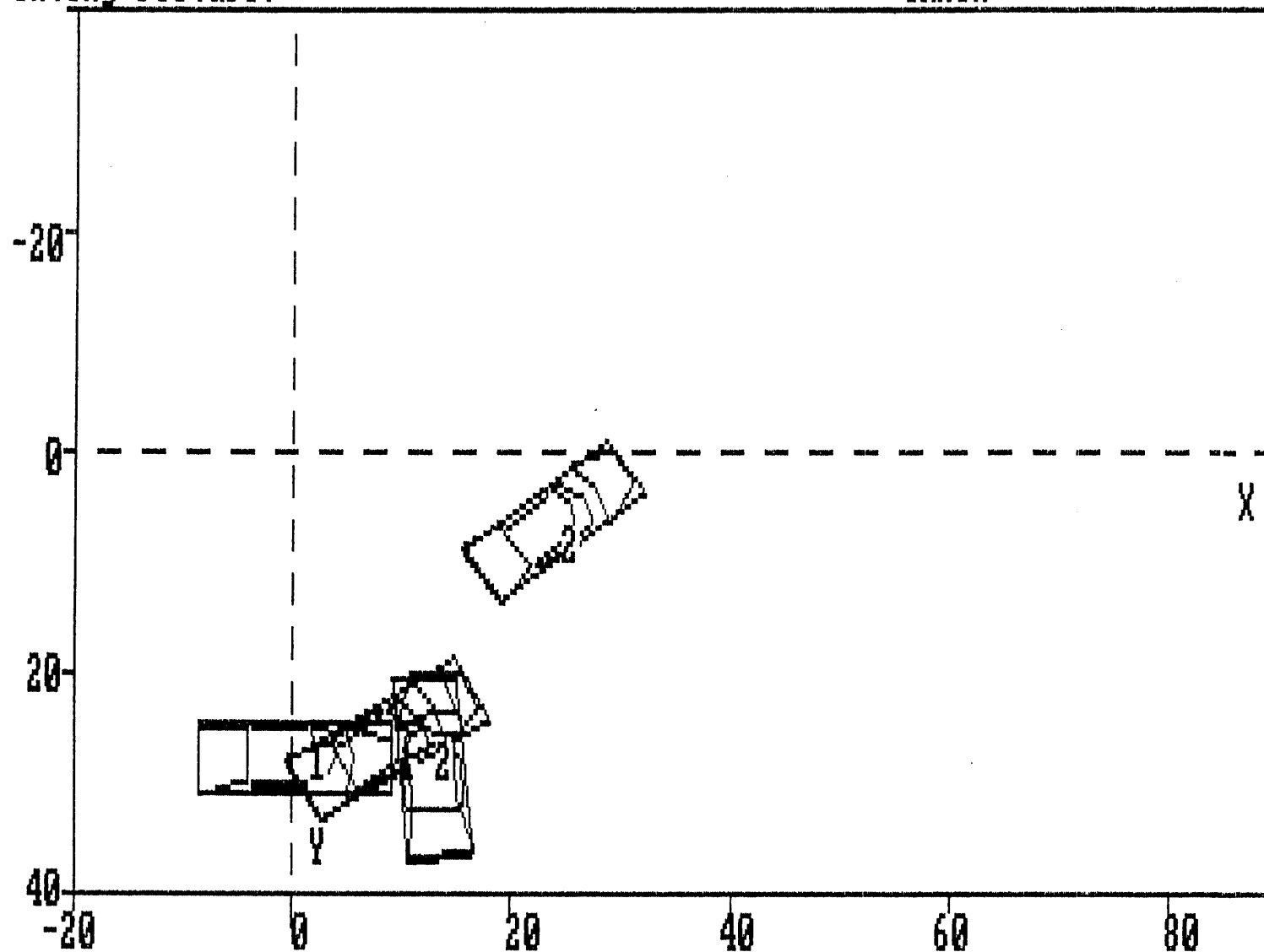
	VEHICLE #1	VEHICLE #2
CG TO FRONT AXLE	139 CM. (55 IN.)	130 CM. (51 IN.)
CG TO REAR AXLE	150 CM. (59 IN.)	141 CM. (56 IN.)
TRACK	157 CM. (62 IN.)	150 CM. (59 IN.)
CG TO FRONT OF VEH	251 CM. (99 IN.)	228 CM. (90 IN.)
CG TO REAR OF VEH	-290 CM. (-114 IN.)	-270 CM. (-106 IN.)
CG TO SIDE OF VEH	98 CM. (39 IN.)	92 CM. (36 IN.)
MOMENT OF INERTIA	16149 KGS (35601 LBS)	15125 KGS (33344 LBS)
VEHICLE MASS	4 KGS (10 LBS)	5 KGS (10 LBS)
ROLLING RESISTANCE		
LEFT FRONT WHEEL	.50	.30
RIGHT FRONT WHEEL	.50	.30
LEFT REAR WHEEL	.20	.15
RIGHT REAR WHEEL	.20	.15

COEFFICIENT OF FRICTION = .70

inting Picture:

CRASH

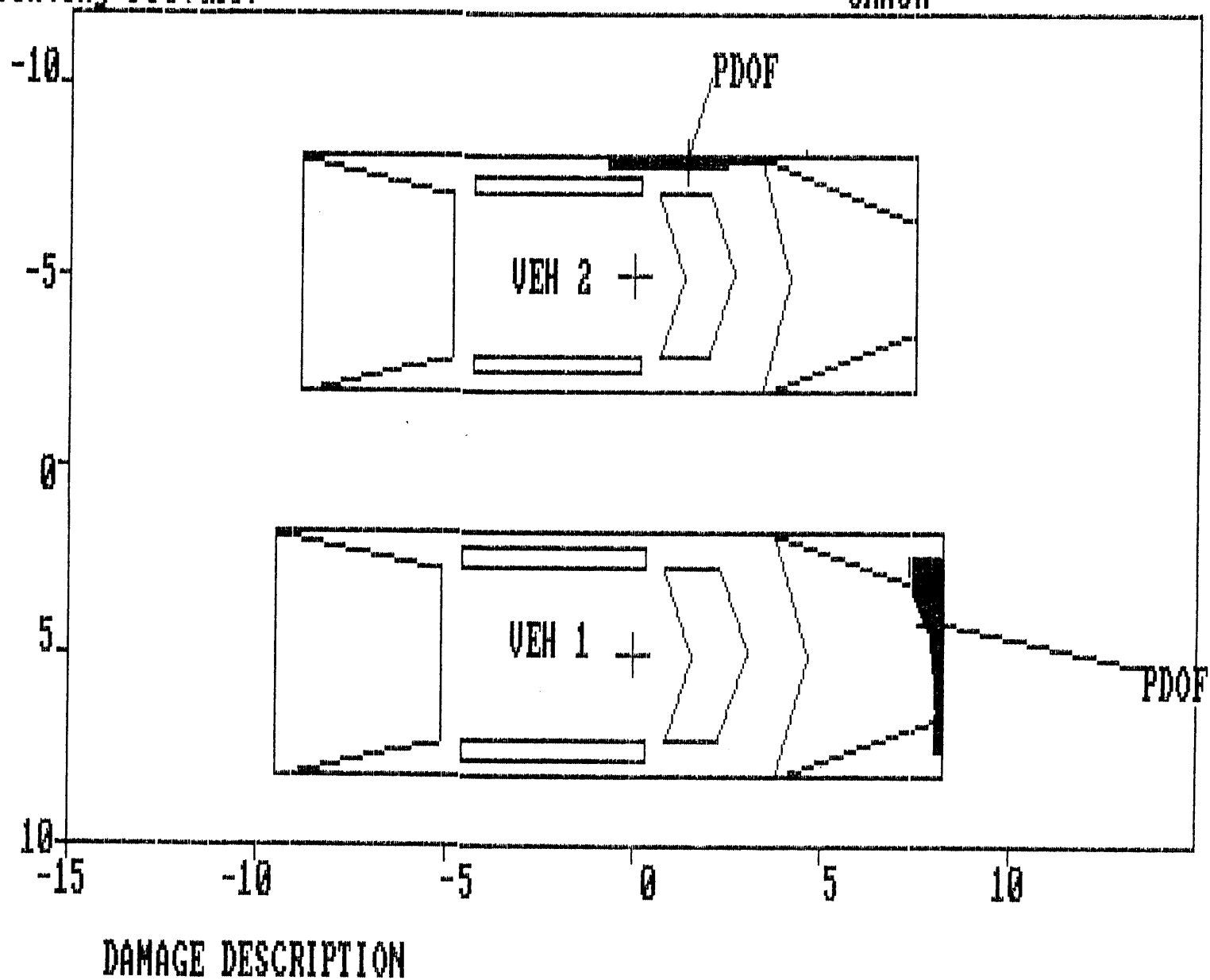
C-5



SCENE DESCRIPTION

Printing Picture:

CRASH



ATTACHMENT D

NASS Vehicle Forms

**NO
FORMS
RECEIVED**

ATTACHMENT E

NASS Occupant Forms

**NO
FORMS
RECEIVED**